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The Effect of Social Networks on Self-Care Behaviors and Health Outcomes among Older People Living with Multiple Chronic Conditions

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THE EFFECT OF SOCIAL NETWORKS ON SELF-CARE BEHAVIORS AND HEALTH OUTCOMES AMONG OLDER PEOPLE LIVING WITH MULTIPLE CHRONIC CONDITIONS

A Dissertation Presented

by

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DEDICATION

I dedicate this to my Father, Raymond Medric LeBlanc, who asked that I go to school, and encouraged me to stay in school and go to school some more. He taught me about the ethics of work, discipline, and the importance of how we approach the craft we create. And, to my Mother, Marilyn Hazel LeBlanc, for inspiring curiosity and for teaching me to be patient, be present and listen. You were my first teachers in learning how to care.

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ABSTRACT

THE EFFECT OF SOCIAL NETWORKS ON SELF-CARE BEHAVIORS AND HEALTH OUTCOMES AMONG OLDER PEOPLE LIVING WITH MULTIPLE CHRONIC CONDITIONS

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Background: Older adults are the fastest growing segment of the population in the United States. By 2030, 72.1 million Americans will be over sixty-five years of age and many live with and manage multiple chronic conditions. Self-care behaviors are a priority to effectively manage chronic conditions, yet a gap exists in our understanding of how social networks influence the outcomes of self-care behavior and health within the context of aging and managing multiple chronic conditions. *Objective:* The aim of this study was to determine how social network features and functions influence self-care behaviors and health among community dwelling older people with multiple chronic conditions. *Design*: This study integrated an explanatory sequential mixed methods design. *Methods*: A cross-sectional sample of eighty-nine community dwelling older adults participated. Descriptive statistics were used to describe social networks. Bivariate correlations and regression statistics were used to examine the relationships of social

networks with the dependent variables of self-care behaviors and health. Qualities that emphasize the contexts of social support expanded the analysis of the survey data. *Results:* Ties strength and social support predicted the outcome of therapeutic self-care, mental health, sense of control and attributed dignity. Distinctions between tangible support and psychosocial support are made. Thematic analysis expanded understanding on network size, psychosocial support, activation of support and interaction frequency and type. *Conclusions:* Social networks influence self-care behaviors and mental health, sense of control and attributed dignity. In living with multiple chronic conditions, this research proposes new ways to understand social members in creating supportive self-care networks in older age.

Keywords: self-care; multiple chronic conditions, social networks, chronic illness, aging

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CHAPTER 1

INTRODUCTION

1.1 Statement of the Problem

By the year 2030 there will be approximately 72.1 million people over the 65 years of age living in the United States (According to the Administration Aging, 2015). Among this population it is estimated that over 80% live with multiple chronic conditions (Anderson, 2010; Buttorff, Ruder & Bauman, 2017; Centers for Disease Control and Prevention, 2016). Improving care for this population is a priority for our Nation (United States Department of Health and Human Services, 2012). Multiple chronic conditions often lead to disability and the higher number of chronic conditions is associated with greater physical, social and cognitive limitations (Buttorff et al., 2017). With an increase in the number of people living longer, with a high number of multiple chronic conditions, understanding ways to prevent disability as well as support individuals in the care of chronic conditions and daily living in our communities, is a health care imperative.

1.2 Caring for Self and Others

Older adults often live alone in the community and care for themselves while relying on formal and informal caregiver relationships. Social relationships offer different levels of influence on self-directed care and health. The physical, mental, and social consequences of living with multiple chronic conditions are complex, influence functional abilities, social roles, and relationships (Buttorff et al., 2017; Harris & Wallace, 2012). Psychosocial developmental changes and changes in function are associated with smaller social networks often resulting in fewer individuals an older person may seek support from (Carstensen, Isaacowitz, & Charles, 1999; Pavela, 2015; Segrin, 2003; Van Ingen, Rains, & Wright, 2017). The importance of social ties and social resource availability varies over the life

course (Ashida & Heaney, 2008; Umberson et al., 2010) making it essential to understand how social relationships influence self-care and health in older age.

1.2.1 Multiple Chronic Conditions Cost

The health care costs of persons living with multiple chronic conditions are some of the highest. It is estimated that the care of individuals with chronic conditions accounts for approximately 85% of health expenditures in the United States (Anderson, 2010). This cost is expected to increase given the rise in the incidence and prevalence of multiple chronic conditions across the lifespan and increased longevity. Living with five or more chronic conditions is associated with higher health care utilization, emergency and inpatient hospitalization, and prescription drug costs (Buttorff et al., 2017). Americans, on average, with five or more chronic conditions, spend significantly more on health services than people with no chronic conditions (Buttorff et al., 2017). Addressing this increased cost necessitates an increased reliance on social supports and an increased level of self-care responsibility shared among informal caregivers, individuals and their relationships. As emphasized by the Robert Wood Johnson Foundation in their ongoing focus, *Chronic Care: Making the Case for Ongoing Care* (2010), understanding what supports persons with multiple chronic conditions in managing their health is vital and will continue to challenge the development of new models of thinking with an emphasis on personal and community level support systems (Anderson, 2010).

1.2.2 The Social Context in Self-Care

Social relationships influence individual health and are the social context where self-care capacity in managing chronic conditions in older age takes place (Gallant, Spitze & Grove, 2010; Watt et al., 2014). The dynamic nature of living with multiple chronic

conditions in older age requires specific self-care behaviors and access to varying levels of support among one's social relationships. There is increasing recognition that managing chronic conditions is a collective process and social networks influence health outcomes for people with chronic conditions. Social networks influence self-management of chronic illness among older adults through the sharing of knowledge, accessing resources, and managing relationships (Vassilev, Rogers, Kennedy, & Koetsenruijter, 2014).

Social relationships create support exchanges and have both resource value and symbolic meaning (Lee & Dunkle, 2010 as cited in Lee et al., 2014). Understanding the influences of relationship factors on self-care behavior is a key area of importance in the management of multiple chronic conditions within the setting of the community for older people (Gallant, 2010). This inquiry extends valuable research in this area, with a specific focus on social relationship influences on self-care behaviors and health, among older persons living with and managing multiple chronic conditions.

1.3 Background

There are interactions in relationships that promote or hinder health and well-being (Scott & Carrington, 2011; Umberson & Montez, 2015). These relationship interactions effect health through behavioral, psychosocial and physiological processes (Gallant, 2003; Uchino, 2004; Uchino, 2006; Umberson & Montez, 2010). Egocentric or personal social networks are defined as those relationships interconnected because of a single individual. Social networks are the interacting and dynamic web of individual relationships that may influence outcomes such as health (O'Malley, Arbesman, Steiger, Fowler, & Christakis, 2012).

Social networks have their own features and functions, such as the type and strength

of each social relationship. The network itself also has features that characterize it such as size, density and homogeneity (Umberson & Montez, 2010; Valente, 2010). Social networks have the potential to provide emotional, information and tangible resources. Self-care among the aging population living with multiple chronic conditions largely takes place on the individual level, within social networks and systems, and within the community. An older adult's personal relationships are considered a dynamic social network that influences health outcomes. It is essential to understand these influences in any attempt to improve health and wellbeing for this population.

1.3.1 Social Networks, Self-Care, and Health

Self-care is an integral aspect of human life that occurs in varying levels across the lifespan and is essential to the management of chronic conditions (Riegel, Jaarsma, & Strömberg, 2012). In this study, self-care is a broad concept defined as a range of behaviors undertaken by an individual to promote or restore their health while managing multiple chronic conditions (Denyes, Orem, Bekel & SozWiss, 2001; Riegel, Jaarsma, & Strömberg, 2012). Self-care is an ongoing process that originates from the older person's perspective as a "capacity, disposition and activity" older people manifest in living with multiple chronic conditions (LeBlanc & Jacelon, 2018, p. 5). Self-care is dynamic and influenced by their changing relationships. The extent of care can become more complex and uncertain when living with multiple chronic conditions in older age (Schoen, Osborn, How, Doty & Peugh, 2009; Wagner, Austin, & Von Korff, 1996; Wagner et al., 2005) making a responsive and positive social network an important influence on health outcomes.

The way social networks function to support older people's ability to act in ways that are healthy was the basis of this research study in extending the current body of well-

established and evolving research. The effect of social relationships on self-care behavior among those living with multiple chronic conditions addresses an important gap and extends the current research on social networks, social support, and self-care that offers a meaningful basis for future interventions.

1.4 Purpose

The primary purpose of this study was to identify how the social environment, including both features and function of social networks, is related to self-care behavior, perception of health, perceived sense of control and attributed dignity among community dwelling persons ages 65 and older living with multiple chronic conditions.

1.4.1 Symbolic Interactionism Theory

Symbolic Interactionism was the dominant theoretical perspective of this research study and is the broad lens in which this study was guided. Symbolic Interactionism is a theory of social psychology attributed to Blumer (1969; 1986). The major assumption of this theoretical perspective is that the behavior or actions of individuals is based on the meaning derived through relationship interactions (Benzies & Allen, 2001). A critical tenet of Symbolic Interactionism Theory, as emphasized by Benzies & Allen (2001), is the idea that the individual and their context are inseparable (p. 544). The interaction itself among relationships is symbolic and the structure has meaning (Stryker & Vryan, 2006; Fuhse, 2009; Pachucki & Breiger, 2010). A central principle of symbolic interactionism, or "interactive determinism", necessitates studying the "interactional contexts" (Stryker & Vryan, 2006, p. 5). In this research study, these contexts were described and understood through social network structures and functions that have characteristics and are locations of perception and meaning that lead to health-related behaviors.

One assumption of Symbolic Interactionism Theory that was tested in this study was

if individuals' perception and interpretations of the meaning of the structure and functions of their social networks have significance on their self-care behavior. Consistent with Symbolic Interactionism Theory, perception of meaning influences health behaviors. Social network analysis traditionally assumes that the structure of the social relationships is responsible for determining individual behavior by creating a context for resources that either promote or constrain health behaviors (Berkman, Glass, Brissette & Seeman, 2000; Wasserman & Faust, 1994). Symbolic Interactionism emphasizes the importance of the meaning of social relationships as the influence on self-care behaviors, perceived health, sense of control and attributed dignity.

1.4.2 Social Network Theory

The fundamental assumption of social network theory and analysis is understanding the structure of the network (Carrington, 2014 in Domínguez & Hollstein, 2014). In informing this study with the theoretical frameworks of social interactionism, social roles and ties are emphasized, and the structure itself is also theorized to have meaning on the interpersonal level that leads to interpretations and that influence outcomes (Fuhse, 2009; Pachucki & Breiger, 2010). A central hypothesis consistent with Symbolic Interactionism Theory is that perceptions of social interactions and interdependent relationships determine the behavioral influences on health. The meaning and perception of social network structure is intersubjective, existing between relationships in social structures. The construction of meaning is highly determined by social environments and "network ties are connected on the level of meaning by roles and identities in a social network" (Fuhse, 2009, p. 64).

1.4.3 Conceptual Frameworks

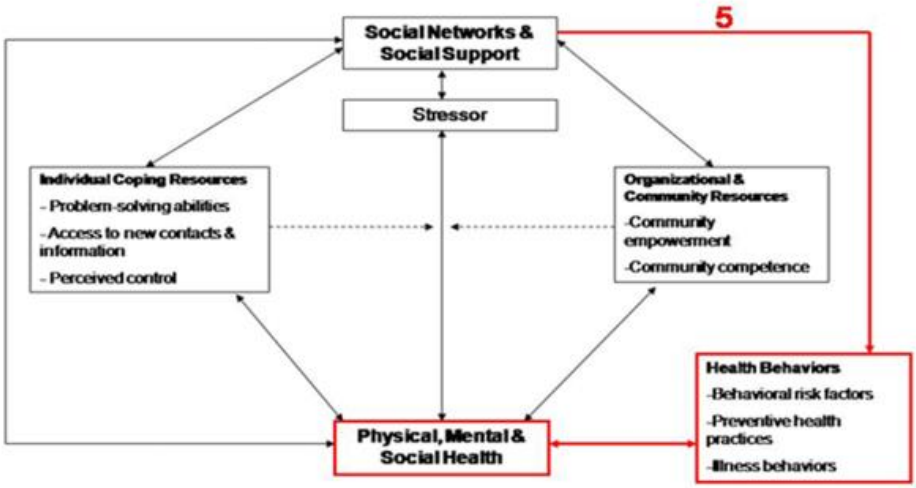
The proposed conceptual frameworks explore the influence of social networks on

self-care behavior among older adults living with multiple chronic conditions and is based on Symbolic Interactionism Theory and the literature on social network structures, features, functions, and how social support as a function and meaning of social networks influences self-care behaviors. Jacelon (2010) proposed a model of self-management of chronic conditions that portrays relationships (social networks) as an integral part of maintaining health among community dwelling older people. In addition, attitude and autonomy, are reflected in the Jacelon model.

Glanz, Rimer, & Viswanath (2008) explicate the relationship between social networks and health in the model portrayed in figure 2.1. The conceptual model of Berkman et.al. (2010) that explains how social networks impact health is comprehensive in guiding the predictive social influences and is based on social-structural conditions, social networks, behavioral mechanisms and pathways. The pathway in red, in the figure below, explains the influence of the social network and its functions of social support on heath behaviors and physical, mental and social health. The concepts of sense of control and attributed dignity are explored in this study as influenced by social support as a network function.

This model hypothesis is extended to suggest that the individuals within their social network are influenced by their relationships, in both the meaning and perception of their relationships, and by the resources of support provided through the strength of their social ties. In addition to the increased evidence of social networks impact on health behavior, prior, foundational research in nursing, maintains a strong positive association between social support and health practices (Hubbard, Muhlenkamp & Brown, 1984). This conceptual framework suggests multiple factors influence the outcome of self-care behavior and health, that emerge from the person and their social environments.

Figure 2.1 Conceptual Model



Glanz, Rimer, & Viswanath (2008)

1.5 Goal

Nurses provide care to reinforce health by supporting the development of their client's own self-care abilities (Spasser & Weismantel, 2006) and consider the person in the context of their social environment. In advancing this goal, the primary aim of this study was to explore how social network features and social network functions influence self-care behaviors and health outcomes among community dwelling older people ages 65 and older living with multiple chronic conditions.

1.5.1 Primary Research Aims, Questions and Hypotheses

In applying this inquiry to the conceptual framework of Social Networks Impacts on Health (Berkman, 2010), this study began by exploring the social network features and how these influence the outcomes of therapeutic self-care and health. Social network features are the upstream factors that influence the behavioral mechanisms and pathways to health (Berkman, 2010). Certain features such as the number of relationships, qualities of these relationships, frequency of contact, and the people within the network that know

one another, can be important in creating conditions where social support can be achieved. The features of the network are therefore important to how the relationship supports or hinders health (Umberson, 2010; Valente, 2010).

Nurses provide care to support health by responding to the individuals and populations response to health; nurses support and develop self-care abilities (Richard & Shea, 2011) within dynamic social contexts. Self-care is considered a nursing sensitive outcome (Doran & Almost, 2003) and to be achieved must consider those factors and features that influence this behavior. To achieve these study goals, the specific aims were to identify social networks among older people living with multiple chronic conditions and examine the relationship among social networks, therapeutic self-care and health outcomes, specifically:

Aim 1. Describe social networks of older adult participants and their social networks.

Aim 2. Examine the relationship between social network features, tie strength, and therapeutic self-care behavior and health.

- Aim (A) 2 Question (Q)a. What is the relationship between tie strength and therapeutic self-care of medications?

  H_A: Tie strength will be positively related to an increase in therapeutic self-care medications.

- A2Qb. What is the relationship between tie strength and therapeutic self-care of symptoms?

  H_A: Tie strength will be positively related to an increase in therapeutic self-care symptoms.

- A2Qc. What is the relationship between tie strength and therapeutic self-care activities?

H_A: Tie strength will be positively related to an increase in therapeutic self-care activities.

- A2Qd. What is the relationship between tie strength and therapeutic self-care health?

  H_A: Tie strength will be positively related to an increase in therapeutic self-care health.

- A2Qe. What is the relationship between tie strength and physical health?

  H_A: Tie strength will be positively related to an increase in physical health.

- A2Qf. What is the relationship between tie strength and mental health?

  H_A: Tie strength will be positively related to an increase in mental health.

Aim 3. Identify the relationships among social network functions (emotional support, informational support, tangible support and affection), self-care behaviors, and health.

- A3Qa. What is the relationship between social support and therapeutic self-care medications?

  H_A: Social support will be positively related to an increase in therapeutic self-care medications.

- A3Qb. What is the relationship between social support and therapeutic self-care symptoms?

  H_A: Social support will be positively related to an increase in therapeutic self-care symptoms.

- A3Qc. What is the relationship between social support and therapeutic self-care activities?

  H_A: Social support will be positively related to an increase in therapeutic self-care activities.

- A3Qd. What is the relationship between social support and therapeutic self-care

health?

H_A: Social support will be positively related to an increase in therapeutic self-care health.

- A3Qe. What is the relationship between social support and general health?

  H_A: Social support will be positively related to an increase in general health.

- A3Qf. What is the relationship between social support and emotional role?

  H_A: Social support will be positively related to an increase in emotional role.

- A3Qg. What is the relationship between social support and mental health?

  H_A: Social support will be positively related to an increase in mental health.

Aim 4. Examine if functional status mediates the relation between social network size and self-care behavior.

- A4Qa. Does functional status mediate social network size and social support?

  H_A: Functional status mediates social network size and social support.

1.5.2 Secondary Research Aims, Questions and Hypotheses

Relationships also influence one's perceptions of self and others and produce both meaning and value (Benzies & Allen, 2001). Perceptions of self-control over one's health and social control by others have been shown to influence health behavior and health outcomes (Bisconti & Bergeman, 1999; Jacelon, 2007; Lachman, 1986; McLean & Pietroni, 1990; Uchino et al., 2015; Wallhagen, Strawbridge, Kaplan, & Cohen, 1994; Wallhagen, 1998). Social network members may attempt to influence self-care behavior at the individual level by exerting social control. While social networks may influence behavior, the level of perceived self-control over that behavior may influence overall health and the willingness to receive social support (Uchino et al., 2015). Social network features and

functions may also influence one's sense of self-control over health behaviors.

Attributed dignity is an important quality that demonstrates respect for self and others (Jacelon, 2004). An individual's dignity is affected by one's social relationships. One's sense of dignity is affected by how one is treated by their social relationships and is often demonstrated by the respect an older person receives in social interactions (Jacelon, 2004; Jacelon, 2013; Jacelon, Connelly, Brown, Proulx, & Vo, 2004; Jacobson, 2007). Perceived self-control and attributed dignity were explored within the context of social networks functions as important to the subjective meaning that is influenced by social relationships and the outcome of perceived support within those relationships.

In meeting the secondary and exploratory aims of this study the following research questions are answered:

Aim 5. Identify the relationship between social network functions, perceived control and attributed dignity.

- A5Qa. What is the relationship between social support and perceived control?

  H_A: Social support will be positively related to an increase in perceived control.

- A5Qb. What is the relationship between social support and attributed dignity?

  H_A: Social support will be positively related to an increase in attributed dignity.

Aim 6. Describe the meaning, beliefs and values of social network influences on self-care and health among older adults managing multiple chronic conditions.

This study addressed the increased need to understand how self-care and health are supported by social networks in an aging population to modify and tailor care to meet individualized needs through the perspective of nursing. These research questions were developed to provide vital knowledge that may inform future interventions and inquiry

that can extend beyond the individual to their social relationships in supporting self-care behaviors and optimal health outcomes. This research will add to the existing body of literature that recognizes the influences of social networks as producers of social support that influence health behaviors and the health outcomes among older people. This study used different methods appropriate for addressing different questions to enhance understanding of the complex phenomena of aging and living with multiple chronic conditions and caring for oneself within the contextual influences of one's social environment.

1.5.3 Significance to Nursing Science: Concordance with Goals of Health and Care

The relevance of this research is underscored by two important contemporary shifts in health and care among the fastest growing demographic of older adults. First, this inquiry takes place at a time when healthcare provision is aimed at becoming more relationship-centered, thus, more amenable to self-care strategies (Beach & Inui, 2006; Flagg, 2015). Second, this inquiry is also reinforced by the necessity of improving health for persons with multiple chronic conditions that health research is beginning to address (Boyd & Fortin, 2010; Parekh & Goodman, 2013) with the goal of maintaining care in the community.

This research evaluated critical variables that have been identified in prior research as important predictors to successful self-care and better health among older people. This research study also addressed the *National Institute for Nursing Research's (NINR) Scientific Agenda* key theme of self-management nursing science (self-management is one element of overall self-care) (NINR, 2015), and the underlying objectives of *Healthy People 2020* (United States Health and Human Services, 2012) that include helping older adults manage their own care and prevent disability by maximizing supports in the

community.

1.6 Definition of Terms/Operational Definitions and Measures

1.6.1 Descriptive Variables

- **Multiple Chronic Conditions (MCC):** Chronic conditions are both physical and mental conditions that last a year or more and require ongoing medical attention and/or limit activities of daily living. Living with two or more chronic conditions at the same time are considered MCC (Burrtoff et al., 2017; United States Health & Human Services, 2012). Chronic conditions were operationalized by number, type and category of chronic condition using a chronic illness inventory (see Appendix C, Measures).
- **Socio-demographics:** Characteristics that describe the sample. Specific variables were controlled as identified co-variates in relation to self-care and health.

1.6.2 Independent Variables

- **Social Networks:** An interconnected group of social interactions and personal relationships. These connections have both features and functions (Valente, 2010). Questions used to illicit relationships to the social network included: *"List all those persons you are close to talk to regularly, up to 10 …. Next, from that list tell me about 5 people you feel influence you in managing your health/caring for yourself".* Social networks were operationally defined by measures of their features and functions (See Appendix, C, Measures).
- **Features of Social Networks**: Characteristics that describe one's relationships include – size, strength, frequency of interaction, type of relation, density, proximity and reciprocity (Valente, 2010). Egocentric social networks were operationalized by

measuring the characteristics of 1) size (number of close relationships), 2) proximity (how near or far the relation is to the person – distance), 3) strength of relationship (closeness, duration), 4) frequency of interaction and type per week, 5) type of relationship (friend, partner, family, neighbor), 6) density (people in the network that know each other) and 7) reciprocity (giving and receiving support). Social network characteristics were measured using an adapted *Social Network List (SNL)* method Hirsch (1979; 1980) and hierarchical mapping by adapting the *Social Convoy Questionnaire* (Antonucci, 1986) which identified relationships based on emotional closeness. Strength of tie became the composite score of these features.

- **Functions of Social Networks**: Functions of one's relationships are largely support type and include information, emotional and tangible support (Valente, 2010). Functions of social networks were operationalized as social support and measured using the *Medical Outcomes Study: Social Support Survey - MOS-SSS* (Sherbourne & Stewart, 1991).

1.6.3 Dependent Variables

- **Self-Care:** A multidimensional phenomena that includes the behaviors, actions and attitudes which contribute to maintaining personal health and human development (Sidani & Doran, 2003). Therapeutic self-care was operationalized as behaviors that include taking medications, recognizing and managing symptoms, carrying out activities of daily living and managing changes in health conditions (Sidani, 2001; Godfrey et al., 2011). Therapeutic Self-Care was measured using *Sidani Doran Therapeutic Self-Care Measure for the Home Setting* (Doran et al., 2002)

- **Health:** A state of physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 1948; 2003). Health was operationalized as the perception of physical and mental health and was measured using the *Optum's SF-12v2® Health Survey (SF-12*) (2015) self-report of functional health and well-being.
- **Perceived Control:** The belief that one can determine one's own internal states and behavior, influence one's environment, and/or bring about desired outcomes (Wallston, Wallston, Smith, & Dobbins, 1987; Wallhagen, 1998). Perceived control was operationalized as individual perception of control over the present situation in managing health and is a function of individual assessment of the concordance between perceived environmental demands and perceived resources (Wallhagen & Kagan, 1993). Perceived control was measured using the *Perceived Control Questionnaire –Revised* (Wallhagen & Kagan, 1993).
- **Attributed Dignity:** Attributed dignity is a concept that is dependent on the relationships between individuals and manifests as value for self and others (Jacelon, 2012). Attributed dignity was operationalized as a measure of self-value and perceived value from others and the behaviors of respect for self and for others. Attributed dignity was measured using the *Jacelon Attributed Dignity Scale (JADS)* (Jacelon, Dixon, & Knafl, 2009).

1.6.4 Mediator Variable

- **Functional Status:** Defined as the ability to carry out activities that are essential to daily life independently was operationalized as self-reported ability (shopping,

meal preparation, and use of the telephone, laundry, medication management and financial management). The item on the SF-12 of Physical Function was used to test the mediator effects of functional status on network size and social support. Functional status is related to living with chronic disease and can influence the number of social relationships.

1.7 Summary

Managing multiple chronic conditions is a significant challenge for individuals and their close relationships. Understanding the factors that influence health behavior, promote self-care, prevent disability and are attuned to the importance of perceived control and attributed dignity among older adults is critical for mitigating the effects of these conditions on the health of our population that this study investigated.

There is a well-established basis for how social relationships impact health (Auslander & Litwin, 1991; Bruggencate, Luijkx, & Strum, 2017; Hoos et al., 2017; Keyes, 2002; Reeves et al., 2014; Umberson & Montez, 2010; Zunzunegui, Alvarado, Del Ser & Otero, A. 2003). However, less is known about how the features and functions of these relationships effect specific self-care behaviors necessary to manage multiple chronic conditions and health outcomes among older adults.

Current approaches that support self-care often narrowly focus on individual deficits and diseases and fail to address social influences and relational circumstances (Entwistle, Cribb, & Owens, 2018). To improve the health and outcomes of community dwelling older adults with multiple chronic conditions it is important to understand individual level social relationships, and how the specific qualities of these relationships influence self-care behaviors.

Research that understands multiple factors and can identify critical variables

within social environments that promote self-care behaviors and enhance social support, dignity and self-control among older adults living with multiple chronic conditions are important to living well and living longer in the community. These findings, presented in this study, may lead to innovative interventions that promote effective and supportive self-care on both individual and community level social networks and provide a basis on which to build future inquiry. Better understanding of the influences of relationships on self-care behavior is imperative to lower health care costs, improve health, support caregiving practices, and preserve self-care, dignity, and supportive self-care capacity among the growing population of older adults living with and managing multiple chronic conditions in the community.

CHAPTER 2

REVIEW OF SCIENCE

2.1 Introduction

The science of social network research has been largely interdisciplinary with broad representation including anthropology, sociology, history, social psychology, political science, gerontology, biology, economics, communications science, computer science, and public health, nursing, and health sciences. The study of social networks is the analysis of the structure of social relations and associated functions of these relationships (Valente, 2010).

Relationships may be expressed in network formations to understand multiple interdependent influences on social behavior (Doreian & Everett, 2015; O'Malley & Marsden, 2008). According to Freeman (2004), the social network approach is grounded in the intuitive notion that the patterning of social ties has important consequences. Social network analysis is a strategy for understanding social relationship structures.

While social network research has made significant advancement across a variety of scientific disciplines (Ajrouch, Fuller, Akiyama & Antonucci, 2017; Antonnuci, Ajrouch & Birditt, 2014; Otte & Rousseau, 2002; Freeman, 2004; Wasserman, & Galaskiewicz, 1994), and offers a broad approach and generality in utility for discovery across disciplines (Freeman, 2004; Smith & Christakis, 2008; Valente, 2010), this review of the science focuses on how social networks influence human health behaviors, specifically self-care within the context of managing multiple chronic conditions in older age. In gerontological research, there is clear recognition, historical

and emergent scientific evidence, of the role of social networks on health and that social network analysis provides a depth of understanding of how social networks influence behavior and our understanding of the health and well-being of older people (Ajrouch et al., 2017; Antonucci, 2001; Antonucci, Ajrouch, & Birditt, 2013; Ayalon, Levkovich, & Heyn, 2018; Berkman, Glass, Brissette, & Seeman, 2000; Cornwell, Laumann, & Schumm, 2008; Fuller-Iglesias, Smith, & Antonucci, 2010; Kahn & Antonucci, 1980; Lubben, 1988; Reeves et al., 2014; Unger, McAvay, Bruce, Berkman & Seeman, 1999; Upenieks, Settels, & Schafer, 2018; Sriram, et al., 2018; Valente, 2010; Van Tilburg, 1998).

2.2 Types of Network Structures

A social network is a set of relationships and the interactions among those ties that create a structure (Kadushin, 2012; Valente, 2010). Networks can focus on individuals, groups, and organizations. An egocentric network, a network surrounding an individual, is a view of the network structure as an environment providing opportunities for or against individual behaviors (Wasserman & Faust, 1994). Networks may also be broader structures and conceptualized as social, economic and political (Carrington, 2014).

Across the lifespan, individuals are embedded in social relationships and interactions; these social networks change with development and, in aging research, are associated with life transitions including retirement, residential changes, changes in health, and losses of intimate relationships and friends (Antonucci et al., 2013; Routasalo & Pitkala, 2003; Suanet & Huxhold, 2018). Despite these social network changes, quality, support, and satisfaction with life and relationships are very heterogeneous among older adults, as are perceptions of health and wellbeing (Cornwell & Waite, 2009). Social network structures

are further understood by their features that in turn influence their functions, health behaviors and health outcomes (Berkman et al., 2000; Berkman, 2010; Valente, 2010).

2.2.1 Social Network Features

Egocentric social network research attempts to understand individual relationships and to identify variables that may influence outcomes, such as relationship satisfaction, types of support, and the relationship's influence on mental health, physical health, and health behaviors (O'Malley, Arbesman, Steiger, Fowler, & Christakis, 2012; Valente, 2010). It is these relationships that have the potential to provide emotional, instrumental, and informational resources that are considered essential elements for older adults who may have highly individualized needs, and resources to exchange in return, among their social network members.

There are multiple features (size, density, proximity, reciprocity, closeness, relationship type) that can be used to describe one's relationships. These features may be measured to understand associations within the structure and functions of the social network. In understanding the features of a social network structure, it is important to regard these relational concepts as interdependent (Scott, 2012) and multidimensional.

2.2.2 Size

Across the lifespan, a larger network size may suggest more opportunities for support; however, it is known that social network size decreases as one ages, being smallest among the very old, and it is the qualities and closeness of these relationships that matter to how strong they influence health (Cornwell, Laumann, & Schumm, 2008; Lang & Carstensen, 1994). Cromwell and Laumann (2015), in a longitudinal analysis, noted that when older adults add new relationships in older life, there is a positive association with

improved health. Size of social network also impacts number of available exchanges across roles with the awareness that, among older adults, social network size decreases significantly making fewer relationships available to meet multiple levels of need (Charles & Carstensen, 2010; Van Tilburg, 1998).

2.2.3 Density

Density is defined as the concept that describes the people in the network that know each other and the number of actual connections among network members (Valente, 2010). The greater the density, the more likely the cohesiveness and greater resources of support. Denser networks contribute to better health (Cornwell et al. 2008). Density as relative to social support and health is evident in prior studies (Cornwell et al., 2008; Fiori, Antonucci, & Cortina, 2006, House, Umberson, & Landis, 1988). Cornwell et al. (2008) explain greater density yields more members in one's network and this creates options and opportunities for alternative routes to receive various resources and increases the chance of getting support when it is needed, including informal supports that may have additional benefits on health and wellbeing. In making the distinction between social support and social connectedness, Ashida and Heaney (2008) confirm both network density and proximity of social ties are associated with increased perception of social connectedness and that this perception of connection may be more important to health and wellbeing than the perception of social support.

2.2.4 Proximity and Reciprocity

Proximity, density, and social network size are qualities that interact with one another and are attributed to the exchange of support and reciprocity within networks. The types of resources exchanged depend on proximity. Financial and emotional support do not

rely on proximity to be given or received. Personal care and functional support necessitate closer geographical proximity to be given or received. Frequency of contact is associated with increased social support. Reciprocity is an outcome of social exchange and is an essential concept in understanding caregiving relationships in later life (LeBlanc, 2017)

2.2.5 Role and Relationship Type

Type of relationship (friend, partner, family, and neighbor, formal or informal caregiver) influences perceived support and satisfaction with interaction and resource exchanges. There are generally two kinds of generalized relationships (Kadushin, 2012). The first role within the social network is understood as kinship ties. The second type of roles include less structured relationships, such as friends and neighbors. Similarities or shared values, beliefs and education levels often support social ties.

Kinship and non-kinship roles associated with older age have been extensively studied in the research of Fiori et al. (2006) and they describe a typology of social ties in relationship to mental health among older adults. Five distinct network typologies emerge and are described as nonfamily–restricted networks, non-friends, family, diverse, and friends. Among these types of social networks, depression was lowest for individuals in the diverse network type. This suggests that social role type is important in predicting mental health and wellbeing. In terms of social networks as resources of caregiving support, these roles can be further specified as informal or formal caregivers that extend the network to those relationships that influence health that may not be included when accounting for kin and non-kinship relationships alone.

The structure of social networks is essential to the relational production of social network functions that include social support, social influence, social engagement, person-

to-person contact, and access to resources (Berkman et al., 2000). The structure of social networks is essential to understanding the network functions, and social support is considered a down-stream factor that influences health outcomes (Berkman et al., 2000).

2.3 Social Network Functions

As social networks are the producers of social support, older adults with limited or poorly functioning social networks are at greatest risk for reduced support (Courtin & Knapp, 2017; Medvene et al., 2015; Harasemiw, Shooshtari, Mackenzie, & Menec, 2017). Social disconnectedness, connectedness, and perceptions of loneliness influence both physical and mental health that originate from one's social network (Cornwell & Waite, 2009). Relational ties are channels for transfer of important resources that influence health, such as emotional, financial or caregiving support (Berkman et al., 2000; Wasserman & Faust, 1994).

Social networks manifest at the individual and system level across the lifespan. These networks become particularly important in providing support for maintaining health (Valente, 2010). Social networks, which are often producers of social support resources, narrow as one ages (Hawkley, & Kocherginsky, 2018; Van Tilburg, 1998), resulting in increased support needs with fewer social relationships. Functional limitations can also impact social contact among older adults, influencing health and ability to access social network resources, such as support, affection and companionship (Pvela, 2015).

2.3.1 Social Support

Social support, a function of one's social network, can be understood as a multidimensional and dynamic resource that has been shown to have significant influence on health, quality of life, and mortality among older adults (Cohen, & Wills, 1985;

Hawkley, & Kocherginsky, 2017; House, Landis, & Umberson, 1988; Newsom & Schulz, 1996; Schwarzbach, Luppa, Forstmeier, König & Riedel-Heller, 2014). The quality of social support is a strong predictor of health outcomes (Broadhead et al., 1983; Cohen, 1988; Berkman, Glass, Brissette, & Seeman, 2000; Graven & Grant, 2014).

Innovative options in community based long-term care for frail older adults that enhance social network roles and ties have demonstrated that quality social support reduces mortality, improves quality of life, and improves perceived mental and physical health (Temkin-Greener et al., 2004). Social support is categorized as tangible (providing services such as meal preparation, shopping, housekeeping) and affective (providing emotional support, encouragement, affection and companionship).

2.3.2 Perceived Social Support

Perceived social support has also been associated with decreased mortality in older women (Lyyra & Heikkinen, 2006) and increased resilience (Chang & Yarnal, 2018). Adults age eighty and above with vision loss, offer an important contribution of the differential impact of perceived and received social support, showing the positive impact of perceived support and a negative effect of received tangible support on well-being (Reinhardt et al., 2006). These findings are consistent with other research among older adults that suggest there may be feelings of dependence and low self-esteem with the receipt of tangible support and that this level of support can decrease an older adult's functional ability sooner over time (Bolger et al., 2000; De Leon, Gold, Glass, Kaplan, & George, 2001; Reinhardt et al, 2006).

2.3.3 Resource Exchange

Social relationships are the providers of social support and caregiving resources.

These relationships offer the essential exchanges of emotional, tangible, and information support. Supportive exchanges also maintain stable intergenerational relationships (Antonucci, 1990, Antonucci & Akiyama, 1991; Antonucci, Akiyama, & Birditt 2004; Carruth, 1996; Gouldner, 1960; Mutran & Reitzes, 1984). Social support is well established as important to promoting function, quality of life, and health outcomes (Berkman, Glass, Brissette, & Seeman, 2000; Broadhead et al., 1983; Cohen, 1988; Graven & Grant, 2014; Taylor, 2011).

Boerner and Reinhardt (2003) studied support provision and receipt over time among progressively disabled older adults living with chronic illness and caring for each other that placed them in need of greater support overtime. Health and functional disability were expected to predict support as decreasing over time, however, there was little impact suggesting the relationship between health and support provision may also be interactive rather than unidirectional. Aartsen, Van Tilburg, Smits & Knipscheer (2004) found that, with changes in physical function or increased disability, friends were often replaced with family in supportive networks; however, in cognitive impairment, there was both a decrease in family and friendship network size leading to poorer health outcomes. This finding was extended in decreased social support among persons with sensory loss (Mick, Parfyonov, Wittich, Phillips & Pichora-Fuller, 2018).

2.3.4 Positive and Negative Social Support

It is also evident that social relationships influence health outcomes in both positive and negative ways (Bolger, Zuckerman, & Kessler, 2000; Brooks et al., 2014; De Leon, Gold, Glass, Kaplan, & George, 2001; DiMatteo, 2004; Holt-Lunstad, Smith, & Layton, 2010; Hughes et al., 2014; Reinhardt, Boerner, & Horowitz, 2006; Sriram et al., 2018;

Söderhamn, Lindencrona, & Ek, 2000). In their research, Kwak, Ingersoll-Dayton, and Burgard (2014) found that the receipt of tangible social support made some older persons more vulnerable to perceived loss of control and to negative self-perceptions of aging.

Positive and negative perceptions of social relationships do not have one dimensional influences on health, as evident in the research of Antonucci, Ajrouch, & Birditt (2013) that highlights this through their examination of negative relationship quality. Health outcomes in later life indicate that the association between positive or negative quality relations, and good or bad health outcomes, is too simplistic, and both negative and positive qualities in relationships can impact health in positive ways, depending on specific contexts on the individual level.

Social support is a multidimensional phenomenon, important in older age when living with multiple chronic conditions and variations in health that may necessitate multiple levels of support resources. This support is a function of the social network structure. The social network structure influences the psychosocial mechanism of support and outcomes of health behavior, physical and mental health outcomes (Berkman et al., 2000).

2.4 Social Support and Self-Care Behavior

Social support, an essential function of relationships in supporting self-care in living with multiple chronic conditions in older age, is a strong predictor of health outcomes (Broadhead et al., 1983; Cohen, 1988; Berkman, Glass, Brissette & Seema, 2000; Graven & Grant, 2014). Self-care often constitutes the greatest part of managing chronic health conditions and usually takes place in conjunction with professional care (Dean, 1989; Segall & Goldstein, 1989; Riegel et al., 2012). Self-care is defined by the majority of research studies and perspectives as occurring largely on an individual level

and informed by oneself. In managing multiple chronic conditions there are many dimensions of care and complexity as well as supported self-care (Chou & Wister, 2005; Clarke & Bennett, 2013; Riegel, Jaarsma, & Strömberg, 2012).

2.4.1 Self-Care: Greater than the Self

Self-care activities take place on an individual level, are influenced by social relationships, and can promote wellbeing (Denyes et al., 2001). Emphasized in the theory of self-care of chronic illness (Riegel, Jaarsma, & Strömberg, 2012) is that self-care is comprised of the behaviors and actions performed on an individual level, yet, self-care among persons living with chronic illness is often shared care and influenced by one's social relationships.

Self-care, when understood through a social networks perspective, is also a behavior of interconnectivity whereby all individuals are influenced by their social ties and imbedded in these relationships (Christakis & Fowler, 2009). Specifically, therapeutic self-care is necessary in the management of chronic conditions and includes symptom management, routine treatments and medication self-management, and seeking support resources from others as needed (Sidani & Doran, 2003). These aspects of self-care are not limited to disease management but extend to a broader set of understandings that are based on social influences and how individual behavior is influenced by relationships between individuals. Self-care is a key component in chronic care among older people (LeBlanc & Jacelon, 2018).

In 2009, The World Health Organization's evolving definition of self-care (1983, 1998, & 2009) developed from the individual level to a broader scope, including the ability of the individual, family and community "to promote health, prevent disease, maintain

health and to cope with illness and disability" (Webber, Zhenyu & Mann, 2013, p. 103). Graven & Grant (2014) extend self-care beyond the individual to include individuals and their social networks. Self-care defined from a systems perspective integrates patients, practitioners, and community organizations (Kennedy, Rogers and Bower, 2007).

2.4.2 Social Network Influences on Self-Care

While there is less evidence of how social relationships influence specific self-care behaviors among persons with multiple chronic conditions, Loeb, Penrod, Falkenstern, Gueldner & Poon (2003), offer important insight from their qualitative study investigating how older adults manage multiple chronic conditions and they found social influences were imbedded in all areas of self-management, an aspect of self-care, and were part of maintaining control over one's health. Perceived control within one's relationships is related to self-reported health, and level of perceived control is predictive of recovery of function among older adults (Jacelon, 2007). There is ample evidence of the positive association between social support and health (Arestedt, Saveman, Johansson & Blomqvist, 2013; Ganster & Victor, 1988) as well as a positive association with self-care and self-management behaviors (Nicholson, Meyer, Flately & Holman, 2013).

2.5 Summary: Review of Science

This research study focused on the associations between social relationships, social support, self-care, and health among older adults living with multiple chronic conditions. This research specifically addressed the goals of nursing to assist individuals within the context of their social relationships in living with multiple chronic conditions in the restoration and maintenance of health through an understanding of these dynamic interrelated phenomena. The overarching theoretical perspective of Symbolic Interaction

Theory (Blumer, 1969) offers a framework to understand how social relationships influence the behaviors of self-care and health and extends nursing research to the structure, functions and the meanings of the social network and how these influence self-care behaviors among older adults living with multiple chronic conditions in the community.

CHAPTER 3

METHODS

3.1 Introduction

The primary purpose of this study was to identify how social network features and social network functions influence self-care behaviors and health among community dwelling people ages sixty-five and older living with multiple chronic conditions. The methods reflected the description of social relationships and relationships between social network structures and the functions of social support of these relationships on the outcomes of self-care behavior and health in generating descriptive, explanatory and exploratory knowledge (Tashakkori & Teddlie, 2010).

Social network research methods, both quantitative and qualitative (Scott & Carrington, 2011) were used in this study (Domínguez & Hollstein, 2014). Quantitative and qualitative strategies of data analysis were applied; and, there was integration of the data, meta-inference, in the interpretation of the results (Creswell, 2007; Marshall & Rossman, 2011).

3.1.2 Researcher Inquiry Stance, Positionality and Reflexivity

As the primary researcher of this study, it is important to be explicit, as best as I can, in the construction of this knowledge throughout this research process. The stance of the researcher, my beliefs, values, position, and culture, influence what I investigate and the methods of inquiry and interactions that made up a study such as this (Malterud, 2001). As a researcher, nurse and teacher, I am informed by the humanities in which my higher education was founded and my interests in the human experience and health care are situated. The context in which I came to this study is informed by my experience as a practitioner in nursing, teacher, and caregiver with personal experiences engaging in the

healthcare system. As such, this position has allowed me entry into unique experiences and to encounter the challenges and intersection of human experiences that are viewed as interconnected and personal. The meta-paradigm of nursing (person, health, environment and nurse) influences the topics which were chosen in this study and the methods that combine quantitative and qualitative information that approach this discovery from the stance of the broader research community of the social sciences.

3.2 Rationale and Philosophical Assumptions

This study used a mixed method design based philosophically on pragmatic assumptions with an emphasis on multiple modes of inquiry appropriate in meeting the challenges of complex phenomena. According to Morgan, (2007) the strength of a pragmatic approach to "social science research methodology is its emphasis on the connection between epistemological concerns about the nature of the knowledge that we produce and technical concerns about the methods that we use to generate that knowledge" (p. 73). The use of quantitative and qualitative techniques was "informed by the researcher's viewing position, which [shaped] what techniques [were] combined, and how and why they [were]combined" (Sandolowski, 2000, p.254). The research questions investigated both perceptual and contextual understandings and intentionally integrated both descriptive and inferential methods as a strength of the design (Creswell, Klassen, Plano Clark & Smith, 2011).

3.3 Research Design: Sequential Explanatory Mixed Method

A cross-sectional, descriptive and correlational study design guided by the broad social science theoretical perspectives was used and conducted in two distinct sequence phases. First, the researcher established knowledge of social network features and

functions and their influences on self-care behaviors from the views of participants through quantitative methods and survey data. This design tested the proposed conceptual models (Berkman et al, 2010). Mixed methods were sequential quantitative followed by qualitative interviews in two phases. These phases were separate in time, a sequence, and drew from the same sample based on the specific supposition that collecting diverse types of data is necessary to understand these research questions (Creswell, 2003; Creswell, 2013; Creswell et al. 2013; Ivankova, Creswell, & Stick, 2006).

The study combined survey data as the primary quantitative method followed up with open-ended interviews in phase two, to collect detailed qualitative descriptive views from participants for deeper description of social relationship influences on self-care in living with and managing multiple chronic conditions. During analysis the researcher elaborated on the findings of one method of quantitative correlation with qualitative thematic data on these social network influences. This intentional mixed method design developed a clearer understanding of the research questions asked and attempted to account for the multilevel variables that are thought to influence one another (Creswell, 2013).

3.4 Population

Older adults are the fasting growing demographic cohort in the United States and in many countries globally (United Nations, 2015). The United States, according to the United States Census Bureau (Ortman, Velkoff & Hogan, 2014) while still a comparatively younger developed country, will also experience a rise in the older adult population with those 65 and older projected to be 83.7 million in 2050, double the size of the population in 2012. Life expectancy will continue to increase especially with the number of the oldest-old age

group (age 85 and over) the fastest growing population cohort expected to rise from 5.9 million in 2012 to 8.9 million in 2030 and by 2050 to reach 18 million (United Nations, 2015, p.6).

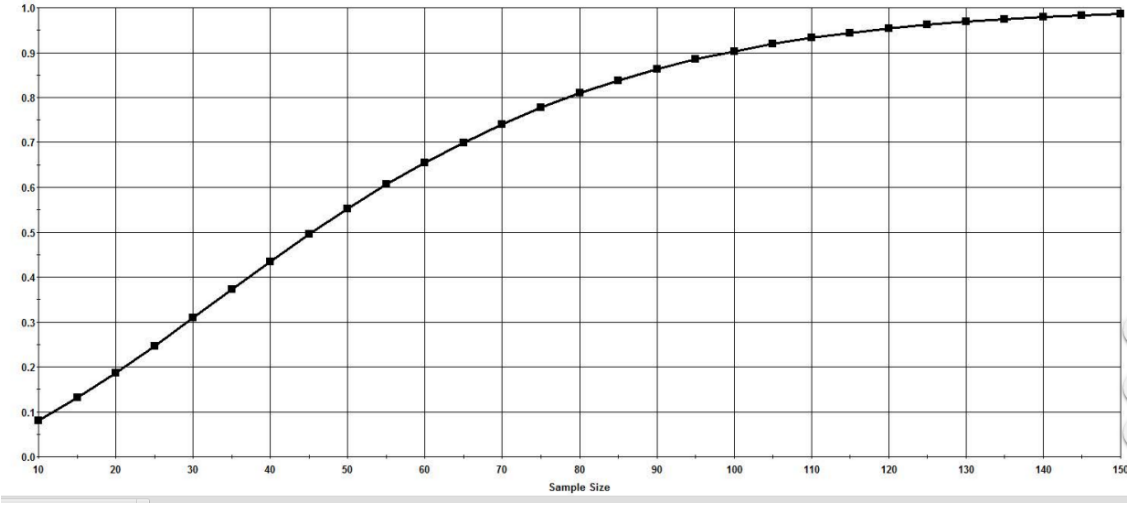
With a rapid rise in a relatively short period of time, the dependency ratios, projections across the lifespan (both young and old) of those who require some level of dependent care is expected to dramatically shift and increase. While the main causes of mortality among the US population continues to be chronic diseases, longevity in living with multiple chronic conditions is expected to continue to increase with a necessity to optimize self-care in managing chronic conditions with the goal of preserving function, independence and capability. Within Massachusetts, the setting for this study, the population estimates for 2014 indicate 15.1% of the population is 65 or older and this is up slightly from the National Average of 14.5%, accounting for over 1 million people (Ortman, Velkoff & Hogan, 2014).

Criteria for study inclusion were: Massachusetts community dwelling individuals age 65 years and older, living with two or more chronic conditions, spoke and understood English, were able to participate in an interview, volunteer to participate, and understood the consent. Exclusion criteria included: age younger than 65, lack of two chronic conditions, and inability to participate in the interview or understand consent in participation.

3.4.1 Sample Size

While the design was mixed methods and thus greatly varies on sample size requirement (Onwuegbuzie & Collins, 2011), it is understood that this was a research study where the central questions investigated correlations and associations among multiple variables and greater sample size would increase the rigor of the applied statistical methods. Additionally, this study is primarily exploratory and descriptive based

on a convenience sample with limitations to randomization. Based on the desired probability level (0.05), the number of predictors (8), the anticipated medium effect size (f2 =0.15), and the desired statistical power level (0.8) an adequate sample size to conduct multiple regression analysis was determined to be 102, using the SPSS-22 Sample Power Calculator.



The sample size goal was 102 participants, with a smaller sub-set (nested sample) for the qualitative interview phase based on the qualitative condition of reaching data saturation in the interviews (Sandolowski, 1995).

3.4.2. Institutional Approval

Approval was granted by the University of Massachusetts Amherst, Internal Review Board (IRB) (see Appendix E, IRB Approval), and the Massachusetts Office of Elder Affairs.

3.4.3 Sampling Method

A two-dimensional mixed method sampling technique was used (Fetters et al., 2013; Onwuegbuzie & Collins, 2007). For the quantitative sample a multi-stage purposive sampling technique was applied (Onwuegbuzie & Collins, 2007). Targeted recruitment was

completed through contacting a randomized list of agencies serving older adults in Massachusetts between May 2016 and May 2017. One-hundred and fifty area agencies were contacted (up to three times) in stages and invited to advertise the study; fifteen total agencies agreed to post and cross post. A nested sample from the larger quantitative sample was recruited after the survey interviews of the quantitative study were completed. Through randomization selection of the eighty-nine participants, twelve participated in the qualitative interviews designed to expand on the study findings of the quantitative interviews.

3.4.4 Recruitment

A convenience sample of community dwelling older adults was recruited from community locations across Massachusetts aging services agencies that provide services to persons age 65 and older. Recruitment lasted between May 2016 and May 2017 and was extended with the goal of meeting a sample size of 102 participants, though that was not achieved.

Pre-screening to determine cognitive ability to insure informed consent to participate and insure ethical principles of informed decision making and capacity to answer questions was utilized (see Appendix A, Pre-Screening). As part of acknowledging the contributions to the science of the participants received $25.00. Selected participants who agreed to be part of the additional follow up interview were offered $15.00 for participation.

3.5 Instrumentation and Data Sources

Measurement instruments listed in table 3.1 summarize the concepts of measurement including reliability and variable type.

Table 3.1 Concept, Variables & Measurement

Concept	Variable	Measure	# Items	Range	α
Person	Age Gender Identity Sexual Identity Race/Ethnicity Religion Chronic Conditions	Demographic Questionnaire	21		
	Function	Lawton IADL Measure	8	0-8	0.85
Social Network Structure	Size	SN List Hierarchical Mapping Convoy Model	18	0-10 1-5	
	Age Gender Race				
	Role			0-1	
	Reciprocity			0-5	
	Proximity			0-1 (minutes)	
	Closeness			1-3	
	Years known			(years)	
	Frequency of contact			1-4	
	Contact type			1-4	
	Involvement			1-5	
	Impact			1-3	
	Density			0-5	
	Activation General			0-1	
	Activation Sick			0-1	
	Values & beliefs, health of members And meaning	Questionnaire			
Social Network Functions	Emotional Support Tangible Support Information Support Affectionate Support Positive Social Interaction	MOS-SSS	19	0-5	0.97
Self-Care of Chronic Illness	Ability to manage (medications,	Therapeutic Self-Care Scale	12	0-5	0.88

	symptoms, activities)				
Health	Physical Health Mental Health	SF-12V2 (Optum)	12	0-100	0.89 0.70
	Attributed Dignity	Attributed Dignity Scale	8	1-4	0.82
	Perceived Control	Wallhagen Perceived Control	15	1-4	0.93

3.5.1 Socio-demographics/Multiple Chronic Conditions

Social and demographic data was gathered from a survey to describe the sample including age, race, gender, education, income, health insurance type, sexual orientation, religious identity, type and number of chronic conditions, number of medications daily, and recent hospitalizations Questions asked about lifestyle choices and health maintenance to further describe health behavior including smoking, alcohol intake, and exercise. These characteristics described the participant in the sample (see Appendix C, Measures).

3.5.2 Social Network Features

Measures of social network features are egocentric (Valente, 2010), meaning the relationships directly tied to an individual participant is the source of investigation. Up to ten social relationships were elicited, and of this number up to five were described in detail. These features include multiple variables such as 1) size (number of close relationships), 2) proximity (how near or far the relation is to the person – distance), 3) strength of relationship (closeness, duration), 4) frequency of interaction and type per week, 5) type of relationship/role (friend, partner, family, neighbor), 6) duration 7) density and 8) reciprocity. The unit of analysis is not the individual, but an entity of relationships and the

linkages among them (Wasserman, & Faust, 1994)

Social network characteristics were measured using an adapted Social Network List (SNL) method (Valente, 2010; Hirsh, 1979) and Hierarchical Mapping technique also known as the Convoy Model (Antonucci, 1986). Participants listed those relationships closest to them and described them within degrees of closeness. This method is thought to provide a relatively unbiased account of one's relationships that are considered supportive (Antonucci, 1986). In understanding these social ties, additional questions were asked including size of the network, geographic proximity, closeness, role, frequency of contact, duration of the relationship, density among relations and reciprocity as listed below in Table 3.2 (see Appendix C, Measures).

Participants nominated members to their network based on how close they felt to them by answering: "list all those persons you are close to, talk to regularly" … "Next, from that list tell me about 5 people you feel influence you in managing your health/caring for yourself". This prompt was used to nominate social network members among older people consistent with the Convoy Model of hierarchical mapping (Antonucci, Ajrouch, & Birditt, 2013; Kahn & Antonucci, 1980) in creating a social network list (Valente, 2010).

Table 3.2 Feature of Network and Measure

Feature	**Measure**
Size	The total number of close relationships noted up to ten. Full details on up to five relationships.
Geographic proximity	Yes (1) or no (0) as to whether the network member lives within an hour drive or not. Then give distance in time it takes to see that person in minutes.
Closeness (in reference to supporting health)	Measured using the hierarchical map (described) with those relationships closest to the individual noted within a map of concentric circles. Those relationships up to 5 that are closer being mapped visually as closest to the individual (Antonucci, 1986).

Continued to next page

Feature	Measure
Type of relationship	Described and number value associated with role type.
Duration of relationship	Number of years in relationship.
Density	The number of persons within a network that are connected or know one another.
Reciprocity	Within each listed relationship, do you give support to this person and receive support from this person? Yes (1), No (0)

From this list of relationships participants were asked in addition to characteristics listed above, the level of involvement/influence (0=not involved, 1=involved, 2= very involved) in their care and the impact of that relation's involvement in their care (0=no impact, 1=negative impact, 2=positive impact) and if they would activate support in these relationships when they were sick or in general.

3.5.3 Social Support

Social support is considered an outcome of social networks and is differentiated by type of support. Social support was measured using the Medical Outcomes Study: Social Support Survey - MOS-SSS (Sherbourne & Stewart, 1991). The MOS-SSS is a 19-item self-report scale for persons with chronic health conditions. Adequate internal consistency reliability has been identified for the total score as well as the four subscales (Sherbourne & Stewart, 1991). Subscales include emotional and informational support (eight items), tangible support (four items), affectionate support (three items), positive social interaction (three items) and an additional item about companionship. Items are scored from 1 (none of the time) to 5 (all the time). The range in score is 19 to 95, with a higher score denoting greater social support. Internal-consistency reliability estimates are reported as exceeding a 0.50 standard showed high convergent and discriminant validity of all items, $\alpha = 0.97$ (Sherbourne &. Stewart, 1991). Normed comparison data was used to understand how the overall level of social support in in this sample compared with the population in general.

3.5.4 Functional Status

Functional ability is considered an essential indicator descriptive of health and wellbeing and was described to reflect the status of the sample. Reliable and valid information about functional status is essential to understanding needs among those living with multiple chronic illness (CDC, 2013) and relationship of function to self-care activity. Functional ability was measured using the Optum's SF-12v2® Health Survey (SF-12) (2015) subscale on physical function. This instrument is appropriate for measuring function among older adults in the community setting. In addition, the Lawton-Brody Scale (1969) further described the level of assistance needed in Instrumental Activities of Daily Living.

3.5.5 Therapeutic Self-Care and Health

Perception of physical and mental health were measured using the Optum's SF-12v2® Health Survey (SF-12) (2015). Twelve items provide an index of self- reported functional health and well-being. Evidence of construct validity and adequate internal consistency reliability has been identified in a population of community dwelling older adults; mental health $\alpha = 0.70$, physical health $\alpha = 0.89$ (Resnick & Nahm, 2001). Normed comparison data was used to understand the overall health of this sample compared with the older adult population in general.

Self-care was measured using the Sidani Doran Therapeutic Self-Care (TSCS) Measure for the Home Setting (Doran et al., 2002). This 12-item scale measures a person's ability to perform activities that are directed at maintaining health, managing health, and restoring function (Sidani & Doran, 2014). Categories measured included four subscales taking medications (three items), recognizing and managing symptoms (four items), carrying out activities of daily living (two items) and managing health

conditions (three items). Responses were rated on a six-point Likert scale ranging from zero to five. Zero reflecting low therapeutic self-care and five a high level of self-care. Subscale scores and a mean total score was calculated. In previous research, the Cronbach's alpha reliability of the Therapeutic Self-Care Scale was 0.88 (Doran et al. 2002) and its four subscales were 0.66– 0.89 respectively.

3.5.6 Perceived Control and Attributed Dignity

Additional variables that are known to be associated with health and self-care based on their association with social network functions were also investigated. Perceived Sense of Control (Wallhagen & Lacson, 1999) was used to understand overall sense of individual perception of control over the present situation in managing health and was used to understand this measure of capacity within the context of participant's social support. This measure has a Cronbach's alpha reliability of the 0.93.

The Jacelon Attributed Dignity Scale (JADS) (Jacelon, Dixon & Knafl, 2009) is a measure of self-value and perceived value from others and the behaviors of respect for self and for others. Attributed dignity has been associated with health (Jacelon, Connelly, Brown, Proulx, & Vo, 2004). It was used here to further explore this variable in relation to social network functions. This is a valid, consistent, and reliable 18 item scale, $\alpha = 0.82$ (Jacelon & Choi, 2014).

3.6 Context, Meaning and Culture

In phase two, follow up qualitative methods, included open-ended prompts and questions (see Appendix D). informed by the researchers experience of the original survey interviews. These interviews explored a deeper description of the phenomenon and participants beliefs and values about these social relationships (meaning of influence of the relationships on health, impact of the relationships on managing chronic conditions, and

salience of relationships influence on health in describing both positive and negative conditional experiences).

3.6.1 Trustworthiness

Criteria proposed by Lincoln and Guba (1985) were applied to insure methodological rigor to establish trustworthiness of the qualitative data of this study phase. The criteria of credibility, dependability, confirmability, and transferability were also intentional actions. The researcher and the participant shared in the process. Actions to insure trustworthiness included participant checking and including the participant to the extent that they wished to be involved and in cases providing full transcripts to the participant and summarizing answers to questions. Transparency was maintained by describing all research methods and rationales. Expansion of data collection methods strengthened the credibility, dependability and conformability of this study overall. An audit trail was kept in the form of a research journal of memos to enhance confirmability. Transferability was enhanced by using participant's quotes to provide a detailed description of the phenomenon of interest in this study (Duffy, 2012).

3.7 Data Collection Procedures

Data collection procedures included recruitment pre-screening over the telephone for eligibility, informed consent described and then mailed and returned signed prior to interview, survey data collection through phone interview, followed by an open-ended telephone interview at a different time for select randomized participants. Potential participants were screened for eligibility (see Appendix A, Pre- Screening) by the Principal Investigator. If criteria for inclusion was met, an interview was scheduled at a time of the participant's choice. A copy of the informed consent was reviewed and then mailed with a self-addressed stamped envelope for the participant to sign and return,

confirmation of the meeting date and time were also included in a brief note thanking participants for their interest and reminding them of the interview. On the day of the telephone survey interview, prior to beginning, the project was explained again in full and the informed consent form read out loud by the researcher and approved by the subject and the researcher (see Appendix B, Informed Consent). The researcher asked the participant to summarize their role as a participant based on their understanding of the informed consent to insure understanding and agreement in the interview process.

The interview began with the demographic questions. The Social Network List open-ended questions were administered next with specific order to the measures. These additional interview questions of the measures were verbally read to the interviewee, answered and documented. At any time, the participant could choose to stop, in this case they may opt to rest and continue or reschedule. When the interview was completed the participant was thanked and mailed a gift card for their participation with postal return receipt for tracking (see Appendix C, Measurement). At that time, if prior to agreed to in the informed consent process, the participant was reminded of their interest in following up for an additional interview, that of the total group, a random selection of persons would be selected, and they would be contacted later. Additionally, participants were asked if they would like to be mailed a summary of the findings -- yes or no -- as part of a participant-based goal to disseminate the data specifically to those who participated in the study. Of those respondents that answered yes for an additional open-ended interview, a random sample of participants was scheduled later, these interviews were conducted, and tape recorded (see Appendix D, Interview Guide).

3.8 Implementation

The study took place over two years with IRB approval, followed by recruitment, to enrollment in the study from May of 2016 and phase two of the sequence completed in July 2017, followed by transcription and data analysis completed in March 2018 with write up of results and dissemination.

3.8.1 Data Management

The following procedures were used to protect the confidentiality of research study records. Names or identifying information was not used and participants were assigned initials and first-names in collecting social network level data. All research records were labeled with a code. Consent forms with identifying information were kept in a locked file apart from the study data that will be destroyed in six years. All audio files, and transcripts of interviews were identified by a first name pseudonym and kept on a double password-protected computer. All data analysis documents used de-identified data. A master list tracking the recipient's name and address was kept in a password protected file for proof of recipient's receipt of study incentive. Only the Principal Investigator has access to the passwords for the computer documents or access to paper files.

3.8.2 Data Analysis

Prior to analysis addressing study aims, variable distributions were examined for missing and out-of-range data and for normality. There was very little missing data. Descriptive statistics include frequency tables, measures of central tendency and dispersion. The relationship among study variables was initially examined via Pearson Product Moment Correlations, independent group t-tests, or analyses based on the level of measurement for the variables included in each analysis. Following this, specific study

aims were examined using correlations, multiple regression and ANOVA to allow for statistical control of covariates. The analysis chosen was based on the level of measurement of the outcome variable. Because a control variable cannot be a confounder unless it is related to both the predictor and outcome, control variables were selected for inclusion in the regression analyses based on their relation to the outcome, which has the additional advantage of increasing precision by also including covariates unrelated to the predictor (Mohamad, Baghestani, Vahedi, 2012). Control variables that were even modestly related to each outcome (at $p < .20$) were included as a covariate. In the regression models, all variables were entered into the regression model simultaneously (probability of F to enter=0.05) and run separately. The magnitude of the relation between the predictor and outcome was evaluated by examining the beta coefficient. All analyses were conducted using SPSS V24 (IBM, 2013).

Open-ended questions that further explored the social relationships were analyzed using a qualitative thematic analysis. Thematic analysis was completed using NVivo11 (QSR International, 2015). Following an interview guide (see Appendix D), all interviews were digitally audio-recorded and professionally transcribed for analysis. Analysis of the transcripts was conducted using thematic content analysis (Boyatzis,1998; Braun & Clarke, 2006). NVivo11 was used to organize descriptive data into codes and sub-codes and a matrix was created to further organize the themes per Apriori domains based on the theoretical frameworks of the types and ways social relationships influence health and informed in part, by completion of the first phase of quantitative discovery, to gain better understanding of relationship influences on self-care behaviors. The following steps of thematic analysis: becoming familiar with the data, generating initial codes, searching for

themes, reviewing themes, defining and naming themes and producing a list of themes and repeat comparison using a matrix to organize these were created in the analysis phase with iterative checking back to read through complete transcripts to confirm context and meaning for consistency with the themes identified and exemplar quotes (Braun & Clarke, 2006, 2014). The Standards for Reporting Qualitative Research Recommendations are used in reporting this qualitative phase (O'Brien, Harris, Beckman, Reed, & Cook, 2014).

3.9 Summary: Methods

This non-experimental, descriptive, correlation study, informed by the disciplines of sociology, psychology, anthropology and directed from the discipline of nursing examined relationships of older people living with complex chronic conditions and how the strength of these social ties influenced self-care behaviors and health. That relationships influence health is consistent among research findings as established, however, a better understanding of central behaviors such as self-care in the management of multiple chronic conditions among community dwelling older adults is a gap that this study addressed that is significant to nursing. A mixed methods study design with emphasis on description and correlation investigated the relationship between the structure and functions of social networks among community dwelling older adults age 65 and older living in Massachusetts.

This study employed three primary types of data collection including social network data, survey data and open-ended interview data and through a carefully constructed analysis offers more explanatory meaning than one singular method. The goal to better understand community level social supports and how social networks can, in future research, possibly be intervened on in meeting the needs of older adults in ways that

promote supported self-care, management of multiple chronic conditions and a broader sense of health addressing social influences was supported by the strength of the methodology as described.

CHAPTER 4

QUANTITATIVE FINDINGS

4.1 Introduction

This chapter presents the quantitative study findings. There are three main methods of data analysis that are explored and explained in meeting the overall goal of this study investigating social network influences on health among older people. The findings include a description of the study participants, description of the social networks of participants, and the presentation of the results of the multiple linear regression analyses of the main study questions. The thematic results of the qualitative interviews, that expand on the quantitative results, are explained in chapter five. Findings are presented in the order of the study design as sequential quantitative followed by qualitative mixed methods with the goal of the qualitative analysis expanding on the quantitative results presented in this chapter.

4.2 Aim 1a: Description of the Sample

The first aim explored the sample description including the central variable describing multiple chronic conditions. Eighty-nine participants represented several Massachusetts Counties (Essex, Franklin, Middlesex) and rural, suburban and urban geographies. The Table 4.1 below demonstrates the percent distribution of older persons recruited in the sample and the percentage of the state sample for persons over age sixty-five years per each county for comparison. There were no participants from Cape Cod or the Islands.

Table 4.1. Sample (N=89) Representation (Age 65+) Of Massachusetts Counties

Massachusetts County	Sample Representation %	State Population Representation%
Essex	15.7	16
Franklin	15.7	19
Hampden	7.8	15.5
Middlesex	25.8	14.3
Suffolk	8.9	11.1
Bristol	4.5	16
Hampshire	2.3	15.3
Norfolk	13.5	16
Berkshire	1.1	21.6
Worcester	4.5	14.4

On average, the eighty-nine subjects had 10.7 (SD =4.1) chronic health conditions. Participant age ranged from 65-97 years of age (mean age= 74, *SD*=7.19) with the highest percentage (69%) of participants falling into the "young-old" category between the ages of 65-75. The next largest group was the "middle-old" adults ages 76-85 (22%), while the "oldest-old," 86 years or older, had the lowest amount of representation (9%). Functional status was described using the Lawton Brody Scale (1969) (*M*=6.9 (2-8); *SD*=1.47) measuring Instrumental Activities of Daily Living (IADLs) shows overall function of the sample with assistance mostly needed in the areas of housekeeping and shopping.

The sample was primarily self-identified as non-Hispanic white (93%), female gender identified (75%), and heterosexual identified (62%). Most of the participants had at least a high school degree (59%) and most owned their homes (58%) or rented (34%). More than double the state average (66%) lived alone. Overall this cross-section of subjects is consistent with current demographic descriptions of Massachusetts residents ages 65 and older (Dugan, Porell, Silverstein, Palombo, & Mann, 2014).

Religious affiliation was self-reported with participants (57%) having a specified

religious affiliation and no religious or spirituality identified (36%). Participants who identified a religious affiliation reported attending religious/spiritual meetings on average at least two times monthly (*M*=2.1 gatherings, *SD*=2.7). Additional group participation was common with participants reporting engagement with two groups on average (*M*=1.6 groups, *SD*= 2.0).

4.2.1 Multiple Chronic Conditions

The top five common chronic conditions reported by participants were: osteoarthritis, hypertension, hyperlipidemia, chronic pain, and thyroid disorders. Mental health conditions included anxiety and depression. More than one-third of the participants reported anxiety and depression. Please see Appendix C, Measures, for full inventory of all chronic conditions and their frequencies. Figure 4.1 shows the top ten chronic conditions for this sample.

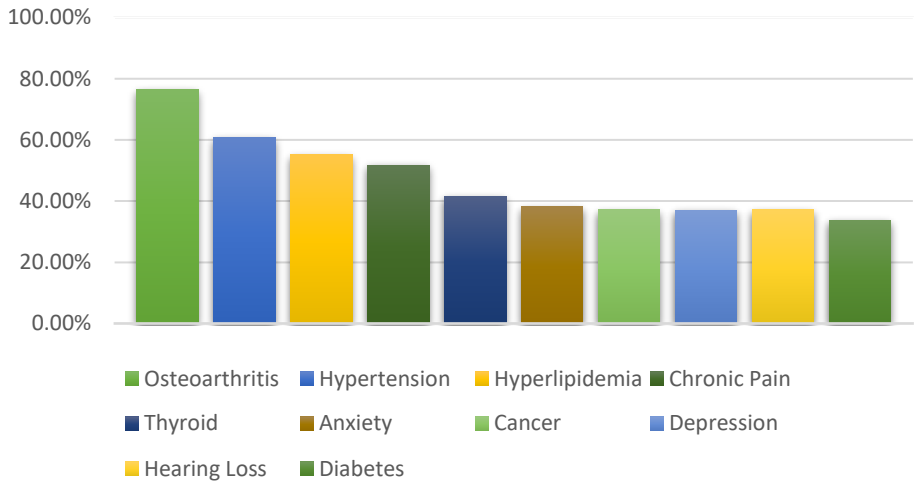


Figure 4.1. Top Chronic Conditions

Participants had active engagement with formal medical care and most (87%) had seen a health care provider within the last three months. In the last year less than one-quarter of the sample (23%) had one acute hospitalization, and less than 20% had two or more

hospital admissions (18%). Polypharmacy was significant and almost half (47%) of participants were prescribed six or more medications per day (*M*=10.9 medications, *SD*=4.1) consistent with managing multiple chronic conditions. While most participants reported not having difficulty paying for their medications, almost one-quarter (24%) did. Healthy lifestyle behaviors were described as: no alcohol intake (76%), avoidance of tobacco smoking (97%), and being active (75%), engaging in some exercise one or more times per week.

4.2.2 Summary: Description of the Sample

The sample represents a cross-section of Massachusetts residents primarily between ages 65-75 *(M*=74, *SD*=7.19), self-identified non-Hispanic white women with a high school education, who live alone managing multiple chronic conditions. Participants had few negative lifestyle behaviors such as excess alcohol consumption and smoking and were involved with religious and community groups. For the full description of participants refer to Table 4.2.

Table 4.2. Description of Sample

	% (N)
Age	
65-75	68.5 (61)
76-85	22.5 (20)
86-95	9.0 (8)
Gender Identity	
Male	15.7 (14)
Female	84.3 (75)
Sexual Identity	
Gay	1.1 (1)
Lesbian	1.1 (1)
Bisexual	-
Heterosexual	69.7 (62)
Asexual	1.1 (1)
No Answer	27 (24)

Continued next page

Religious	
Not Religious	36 (32)
Spiritual	6.7 (6)
Religion Specified	57.3 (51)
Education(n=88)	
Grade School	2.3 (2)
High School	33.0 (29)
2 Year College	27.3 (24)
4 Year College	11.4 (10)
>4 Year College	26.1 (23)
Race	
Asian	1.1 (1)
African American	2.2 (2)
Native Hawaiian/Pacific	1.1 (1)
White, Non-Hispanic	93.3 (83)
Other	2.2 (2)
Hispanic	-

4.3 Aim 1b: Description of the Social Networks

A central focus of this study was investigating the social network features and functions influence on therapeutic self-care and health. This information was gathered using a Social Network Interview List (see Appendix C, Measures). While most participants had people to list as close relationships in their social network, four participants were not able to name anyone to their social network list and therefore were excluded from the analyses of the social networks. In beginning to understand commonalities of these four participants with no close network members, the only shared feature was being hospitalized one or more times in the past year.

Across this sample of eighty-five participants with persons to name, a total of three hundred and seventy-seven social network relationships of participants were identified. The age of network members (*M*=58.9 age, *SD* = 16.7) was younger than participants on average by fifteen years. Networks had a high percentage of female gender members (71%) and friends (41%). Racial representation description of network members described as white (91%), followed by black (4%), concordance noted with the participant reported gender and

racial identity. For the majority, relationships were close, well established, and of long duration *(M*=32.4 years, *SD*=22.2).

The following features of the social networks are described below and include: network size, reciprocity, emotional closeness, density, relationship duration and type, geographic proximity, frequency of interaction, face to face and phone interactions, and willingness of the participant to activate the relationship for support if needed (see Table 4.3). These represent key social network concepts (Berkman, 2010) and are explained in more detail below.

Table 4.3. Descriptive Statistics of Social Network Features

	M	*SD*	Min	Max
Size	7.5	2.8	2	10
Density	3.2	1.3	0	5
Live within Hour	3.6	1.3	0	5
Reciprocity	3.9	1.3	0	5
Frequency of Interaction	3.6	.69	2	5
Years Known	33	15	3	62
Closeness	2.1	.82	1	3
Activation General	3.4	1.5	1	5
Activation Sick	2.8	1.7	1	5

4.3.1 Size and Density

Participants first named up to ten people they were close to (*M* =7.5 members, *SD*=2.8). From this list of ten, participants they then chose five network members as their closest, to provide more detailed information about these relationships. Based on the Hierarchical Mapping (Antonucci, 1986), participants selected the list of network members based on degree of closeness, with the closest being first, with up to five total closest members described in Figure 4.2.

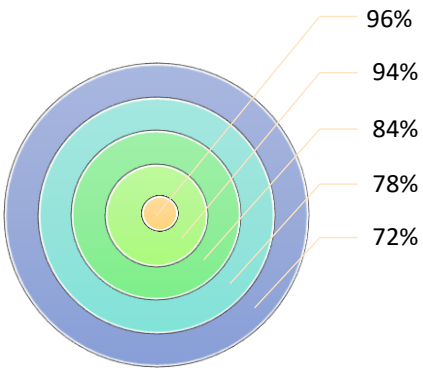


Figure 4.2. Diagram of number of network members by degree of emotional closeness. 85 participants had a person in the closest first position, followed by 84 having a person in the second closest position, 75 having a person in the 3rd position, 69 in the fourth and 64 with a close person as fifth.

Figure 4 .2. Percentage of Close Network Members

Density refers to the number of people in the network that know each other given the number of actual connections in the network (Valente, 2010). The greater the density, the more likely the cohesiveness. Approximately thirty-two percent of participants in an average network had ties to one another. Density is calculated as a portion of the potential connections in a network that are actual connections. Density is calculated as 5(5*4/2) = 10 (n* (n-1)/2) (Marsden, 2008). Mean Actual Connections are dived by Potential Connections = 3.2/10 =.32 = 32%. Mean connections of people in networks that knew one another *M*=3.2 (*SD* =1.3) and potential connections: 5. This reflects a relatively small number (32%) of people that knew one another in the networks, suggesting smaller one on one relationships, versus cohesive dense group social relationships.

4.3.2 Geographic Proximity, Interaction Frequency and Type

Contact frequency and interaction type are important in maintaining close social relationships. Among this sample, most close relationships lived within the hour (*M*=3.6 members, *SD*=1.3) of the participants. Among network members frequency of interaction was predominantly daily (30%) and more than once a week (25%). In person and phone contact were the most common mediums of interaction. The majority (47%) of interactions occurred on the telephone followed by in person (44%). This demonstrates active exchanges

within contact frequency among relationships that live nearby.

4.3.3 Involvement and Health Activation

Closer members, based on network position, had more involvement with the health care of the participants, and the highest levels of involvement were reflected in closer relationships. Higher levels, among participants in stating they would ask network members for general assistance (*M* =3.4 members, *SD* = 1.5), was noted by closer position. Similarly, there were higher levels of willingness to seek assistance if sick (*M* =2.8 members, *SD* = 1.7) by the participant of their network members based on closer position. Overall, network members were reciprocal in their exchanges of support with one another, with higher reciprocity (*M*=3.9 members, *SD*=1.3) indicated by higher levels of closeness.

4.3.4 Relative Level of Closeness

While the participants elected members to their social network list based on emotional closeness it is noted that an additional question in the survey sought to describe more clearly the actual relative perception of this closeness. This question asked participants to describe on a scale of 1 to 3, with 1 being very close, and 3 being less close to rate their relationship of the up to five members. Percentages across the sample indicated most of the relationships were very close (63%), close (27%) and less close (10%). This is relative to one another and relative to the fact that members were elected based on being "close" to the participant in the first place. These results suggest that the level of emotional closeness differs across even those members described as close and is an important quality in how relationships function.

4.3.5 Summary: Description of the Social Networks

From eighty-nine participants, up to three-hundred and seventy-seven network

members were described based on their level of closeness to the participant. The closest network members had stronger ties across all social network features except geographic proximity. High frequency of interaction, in-person and telephone, and activation in seeking and exchanging support were all related to levels of emotional closeness. Density was low overall. Relationship type and duration was primarily identified as friend, and of very long duration (several decades).

4.4. Description of Social Network Functions: Social Support

The influence of the independent variable social support on therapeutic self-care, health, sense of control and attributed dignity was investigated. The function of the network was operationalized as social support and measured using the Medical *Outcomes Study: Social Support Survey - MOS-SSS* (Sherbourne & Stewart, 1991. Presented below in Table 4.4 are descriptive statistics of this social support measure. The scale had a high level of internal consistency, as determined by a Cronbach's alpha of 0.95 (Laerd, 2015). There is internal consistency of the sub-scales with alphas .73-.82.

Table 4.4. Descriptive Statistics of Social Support

N=87	*M*	*SD*	Min	Max	α
Support Emotional/Info	30.1	8.6	9	40	.73
Support Tangible	14.2	4.6	4	20	.80
Support Affection	11.2	3.8	3	15	.80
Support Interaction	14.5	5.0	4	20	.78
Total Social Support	69.9	18.9	29	95	.82

One-sample t-tests were run to compare the sample scale scores to normative data. There were no statistically significant differences between sample social support means and normative data (all p values > .05). Thus, the amount of social support in this sample can be considered typical (see Table 4.5).

Table 4.5. MOS-SSS Comparison to Norm: One-Sample Test

	Test Value = 70					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Emotional	-1.6	1	.36	-1.1	-10.0	7.8
Tangible	-1.1	1	.48	-3.4	-44.1	37.3
Affection	-1.3	1	.42	-.9	-9.1	7.4
Interaction	-.1	1	.94	-.4	-52.5	51.7
Total	-1.0	1	.51	-4.0	-55.4	47.5

4.5 Covariates

Covariates were selected (Bursac, Gauss, Williams & Hosmer, 2008) by a univariate analysis of select variables based on knowledge of this phenomenon of investigation. Inclusion variables had a significant univariate test of a p-value cut-off point of 0.2. Co-variates were selected purposefully for each model and included: age, gender, religiosity, number of chronic conditions (minus anxiety and depression) and living alone.

4.5.1 Dependent Variable: Therapeutic Self-Care

Dependent outcome variables included therapeutic self-care, health, sense of control and attributed dignity. Therapeutic self-care was measured using the *Sidani Doran Therapeutic Self-Care Measure for the Home Setting* (Doran et al., 2002). Descriptive statistics of the dependent variable, therapeutic self-care, are presented below. The scale internal consistency of the twelve-items, as determined by a Cronbach's alpha of 0.72 (Laerd, 2015). There is questionable internal consistency of the sub-scales measuring the four different constructs of self-care presented in Table 4.6.

Table 4.6. Descriptive Statistics of Therapeutic Self-Care

	M	*SD*	Min	Max	α
TSC Medications	14.4	1.1	11	15	.50
TSC Symptoms	17.0	3.1	5	20	.56
TSC Activities	8.5	1.7	3	10	.40
TSC Health	14.0	1.4	7	15	.54
TSC Total	65.9	5.3	21	72	.72

4.5.2 Dependent Variable: Health

The Optum™ SF-12v2® Health Survey (2015) was used to investigate the outcome variable of perception of health. This survey captures "information about functional health and well-being from the patient's point of view" (Optum, 2018). The Optum™ SF-12v2® Health Survey (2015) is described below in Table 4.7.

Table 4.7. Descriptive Statistics Health

N=89	*M*	SD	Min	Max	α
Physical Function	40.0	9.8	25.6	57.1	.84
Physical Role	41.8	9.2	23.6	57.5	.83
Bodily Pain	43.2	11.5	21.7	57.7	.84
General Health	45.7	11.2	23.9	63.7	.84
Vitality	47.7	9.5	29.4	68.7	.83
Social Functioning	46.9	10.7	21.3	56.9	.83
Emotional Role	46.7	9.7	19.9	56.3	.84
Mental Health	48.5	9.8	18.3	64.2	.84
Physical Sum	40.6	10.0	18.6	59.9	.83
Mental Sum	50.5	10.0	17.0	65.5	.84

The physical functioning for the sample was significantly less when compared to the norm using one sample t-tests with the norm value of fifty (Optum, 2018) for this age group (see Table 4.8). Mental health was within the norm.

Table 4.8. Health (SF-12) Comparison to Norm: One-Sample Test

	Test Value = 50					
	T	*Df*	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Physical Function	-9.6	88	.00	-10.0	-12.1	-7.9
Physical Role	-8.4	88	.00	-8.2	-10.1	-6.3
Bodily Pain	-5.5	88	.00	-6.8	-9.2	-4.3
General Health	-3.7	88	.00	-4.4	-6.7	-2.0
Vitality	-2.2	88	.03	-2.3	-4.3	-.3
Social Function	-2.7	88	.01	-3.1	-5.4	-.8
Emotional Role	-3.2	88	.00	-3.3	-5.3	-1.3
Mental Health	-1.5	88	.15	-1.5	-3.6	.6
Physical Sum	-8.9	88	.00	-9.4	-11.5	-7.3
Mental Sum	.5	88	.64	.5	-1.6	2.6

4.5.3 Dependent Variables: Sense of Control and Attributed Dignity

The *Perceived Control Questionnaire –Revised* (Wallhagen & Kagan, 1993), was used to measure perceived resources and control within the present situation. The *Jacelon Attributed Dignity Scale (JADS)* (Jacelon, Dixon, & Knafl, 2009) tested attributed dignity. Sample descriptive statistics for both scales are shown below in Table 4.9.

Table 4.9. Descriptive Statistics Sense of Control & Attributed Dignity

	N	*M*	*SD*	Min	Max	*α*
Resources	89	37.1	6.4	17	44	.68
Control	89	11.7	3.2	5	16	.96
Total SOC	89	48.8	8.7	22	60	.65
SRO	87	17.9	2.9	10	20	.77
BRO	88	18.7	1.9	12	20	.79
SV	87	17.8	3.0	5	20	.73
PVO	86	10.4	2.1	3	12	.79
Total JADS	82	65.1	7.3	33	72	.79

Table 4.9. Sense of Control (Resources, Control, Total); Attributed Dignity (Self in Relation to Others (SRO), Behavior with respect to others (BRO), Self-Value (SV), Perceived Value Others (PVO).

4.6 Social Network Influences on Therapeutic Self-Care and Health

This study explored the relationships between the independent variables of social

network tie strength and social support on the outcome dependent variables of therapeutic self-care, health, sense of control and attributed dignity. The direction of the prediction is based on the conceptual models of how social networks impact health (Berkman, 2010; Glanz, Rimer, & Viswanath (2008) that hypothesize that social network structures provide opportunities for the behavioral mechanism of social support that influence health behavior and impact the outcome of health.

4.7 Statistical Assumptions

Quantitative inferential tests were used to explore the relationships between social networks, social support and the outcomes of therapeutic self-care, health, perceived control and attributed dignity. In meeting the assumptions, non-parametric testing indicated normality of distributions. There was independence of residual observations, as assessed by the Durbin-Watson statistic with acceptance of results between 0 and 4. Shapiro-Wilk's test of normality was used in assessing normal distributions in small studies closest at 1. One measure, therapeutic self-care was slightly negatively skewed across the four domains. The decision was made not to transform the variables at this time and are represented with this important consideration.

4.8 Aim 2: Examine the Relationship Between Tie Strength, Therapeutic Self-Care and Health.

The goal of this aim was to explore social network features effect on therapeutic self-care behaviors. The hypothesis being that higher social network features are positively related to an increase in therapeutic self-care behaviors. A principal component factor analysis (PCA) was used to simplify the complexity of the high-dimensional data that measured social network feature variables presented in Table 4.10. The social network

feature data were transformed into fewer dimensions based on the factor analysis of the six dimensions (reciprocity, size, geographic proximity, density, activation in general and when sick) of these variables that are related to one another based on the factor analysis presented in Table 4.10.

Table 4.10. Descriptive Statistics and Factor Analysis of Tie Strength

N=85	Mean	SD	Min-Max	Factors		
Reciprocity	3.94	1.3	0-5	**.826**	-.078	-.181
Size	7.44	2.78	2-10	**.793**	-.090	-.128
Proximity Within Hour	3.6	1.3	0-5	**.776**	-.256	-.082
Density	3.23	1.3	0-5	**.703**	.368	.042
General Activation	3.4	.82	0-5	**.685**	.080	.298
Activation Sick	2.67	1.72	0-5	**.463**	.109	.297
Duration in Years Known	33	15	3-62	-.101	**.798**	.235
Close Interaction	2.37	.41	1-3	-.017	**-.750**	.330
Involvement in Health	3.0	1.1	1-5	-.120	-.069	**.793**
Frequency Interaction	3.6	.69	2-5	.107	.004	**.551**

Descriptive statistics of the constructed variable tie strength are presented in Table 4.11.

Table 4.11. Descriptive Statistics of Tie Strength Constructed
Standardized Values as Variables

N=85	*M*	*SD*	α
Reciprocity	.02	.99	.83
Size	.05	.99	.84
Proximity Within Hour	.01	1.00	.84
Density	.00	1.00	.84
General Activation	.02	.99	.83
Activation Sick	.00	1.00	.87

Pearson correlation coefficients (see Table 4.12) were computed in exploring the relationship between tie strength, the features of the social network, and therapeutic self-care among participants.

Table 4.12. Summary of Correlations for Tie Strength

	Tie Strength
	r
Medications	.20†
Symptoms	.22*
Activities	.30**
Health	.18

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

The correlations listed above in Table 4.12 show there is significant correlation between social network tie strength and therapeutic self-care behaviors across the domains of therapeutic self-care in symptoms, and therapeutic self-care activities.

4.8.1 A2Qa: What is the Relationship Between Tie Strength and Therapeutic Self-care Medications? H_A: Tie strength will be positively related to an increase in therapeutic self-care medications.

A multiple linear regression was run to test the relationship between tie strength, the covariate living alone, and therapeutic self-care medication management. The results of the regression indicated that there was a weak positive relationship between tie strength and therapeutic self-care in medication management (β =.20, p=.072). The results of the regression F (2,81) =2.4, p =.102. R^2 for the overall model was .055. A summary of the regression model is below in Table 4.13.

Table 4.13. Summary of Regression Therapeutic Self-Care Medications

	β
Tie Strength	.20†
Live Alone	.10

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This finding shows no significant influence of tie strength with medication self-care as an association of social network influence on health behavior (Berkman, 2010).

4.8.2 A2Qb: What is the Relationship Between Tie Strength and Therapeutic Self-care

Symptoms? H_A: Tie strength will be positively related to an increase in therapeutic self-care symptoms.

A multiple linear regression was run to test the strength of the relationship between tie strength, living alone, and therapeutic self-care of chronic condition symptoms. The results of the regression indicated that tie strength was not significant (β =.19, p =.073) and living alone (β =.23, p =.031) was significant in this model. This suggests a positive association between living alone and therapeutic self-care symptoms. The results of the regression F (2,81) = 4.7, *p* =.012, explained 10% of the variance in the model. R^2 for the overall model was .10. A summary of the regression model is below in Table 4.14

Table 4.14. Summary of Regression Therapeutic Self-Care Symptoms

	β
Tie Strength	.19†
Live Alone	.23*

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This data shows a positive influence of living alone associated with symptom self-care of chronic conditions and the association of social network influence on health behavior (Berkman, 2010).

4.8.3 A2Qc: What is the Relationship Between Tie Strength and Therapeutic Self-care Activities? H_A: Tie strength will be positively related to an increase in therapeutic self-care activities.

A multiple linear regression was run to test the relationship between tie strength, living alone and therapeutic self-care activities. The results of the regression indicated a positively significant relationship between tie strength (β =.29, *p* =.008) and therapeutic self-care activities. The results of the regression F (2,81) =4.3, *p* =.017. R^2 for the overall model was .095. A summary of the regression model is below in Table 4.15.

Table 4.15. Summary of Regression Therapeutic Self-Care Activities

	β
Tie Strength	.29**
Live Alone	.07

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This data shows positive significance of tie strength on self-care activities among persons with chronic conditions and the association of social network influence on health behavior (Berkman, 2010).

4.8.4 A2Qd: What is the Relationship Between Tie Strength and Therapeutic Self-care Health? H_A: Tie strength will be positively related to an increase in therapeutic self-care health.

Investigating the relationship between tie strength and therapeutic self-care in general health, a multiple linear regression was run to test the relationship between tie strength, living alone and therapeutic general health self-care. The results of the regression indicated that tie strength did not significantly predict participants general health self-care. The results of the regression R^2 =.049, F (2,81) =2.1. A summary of the regression model is below in Table 4.16.

Table 4.16. Summary of Regression Therapeutic Self-Care General Health

	β
Tie Strength	.16
Live Alone	.14

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This data does not show any significant influence of tie strength and living alone on general health self-care nor the association of social network influence on this health behavior (Berkman, 2010).

Based on the above multiple linear regression models overall tie strength did not significantly predict therapeutic self-care except for therapeutic self-care activities which

was significant. Therapeutic self-care activities include those activities a person is taught to manage their chronic conditions. Additionally, there was a positive significant relationship between living alone and therapeutic symptoms self-care.

4.8.5 Tie Strength and Health

The second focus of this aim sought to explore the relationship between tie strength and perceived health. It was hypothesized that social networks with greater positive tie strength would be associated with higher levels of perceived health. A Pearson's product-moment correlation was run to assess the relationship between tie strength and health. There was a positive correlation between tie strength, vitality, and mental health (see Table 4.17).

Table 4.17. Summary of Correlations for Tie Strength and Health

	Tie Strength
	r
Physical Function	-.07
Physical Role	.02
Bodily Pain	.00
General Health	.13
Vitality	.30**
Social Functioning	.17
Emotional Role	.14
Mental Health	.34**
Physical Sum	-.08
Mental Sum	.35***

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

These correlations show the association between the social network influence of tie strength on psychosocial health (Berkman, 2010). Regression is used to further explore the relationship between tie strength, vitality and mental health.

4.8.6 A2Qe: What is the Relationship Between Tie Strength and Perceived Health (vitality)? H_A: Tie strength will be positively related to an increase in perceived health

(vitality).

Multiple linear regression was run to test the relationship between tie strength, living alone, and vitality. The results of the regression indicated a positive significant relationship between tie strength (β =.28, *p* =.011). The results of the regression R^2 =.111, F (2,81) =5.06, *p*=.009. A summary of the regression model is below in Tale 4.18.

Table 4.18. Summary of Regression Vitality

	β
Tie Strength	.28**
Live Alone	.15

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

Given the significance, this data shows a positive influence of tie strength on vitality and the social network influence on this aspect of health (Berkman, 2010).

4.8.7 A2Qf: What is the Relationship Between Tie Strength and Perceived Mental Health? H_A: Tie strength will be positively related to an increase in mental health.

Multiple linear regression was run to test the relationships between tie strength, living alone and mental health. The results of the regression indicated that there was a significant positive relationship between tie strength (β =.33, *p* =.002) and mental health. The results of the regression $R^{2=}$ .137, F (2,81) =6.41. A summary of the regression model is below in Table 4.19.

Table 4.19. Summary of Regression Mental Health

	β
Tie Strength	.33**
Live Alone	.13

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This shows a significant positive predictive relationship between tie strength and mental health. There is a positive relationship between the social network influence, tie strength, on the psychosocial pathways of health (Berkman, 2010).

4.8.9 Summary: Tie Strength, Therapeutic Self Care and Health

This aim of the study sought to explore the relationship between social network features, operationalized as a measure of tie strength, therapeutic self-care behaviors and the outcome of health. Tie strength did not significantly predict therapeutic self-care across the domains of medication, symptoms and health self-care, while there was a significant association with activity self-care among this sample managing multiple chronic conditions.

There was a significant positive relationship between living alone and therapeutic self-care of symptoms. In summary of the regression models, this data shows a positive relationship between tie strength, vitality and mental health. It is noted that in addition to tie strength, age and chronic illness were also significantly associated with mental health, and age with general health (see Table 4.20). In this sample there was a positive relationship between older age and higher overall mental and physical health. Chronic illness showed an inverse relationship with mental health supporting, the relationship between number of chronic conditions with poorer mental health.

There is a positive influence of tie strength with mental health. This partially supports the Apriori hypothesis that social network features influence health among these study participants specifically mental health and a sense of vitality. The strength of ties impact on health is associated with psychosocial pathways (Berkman, 2010) in this sample. A summary of the bivariate linear regression analyses addressing this aim are presented in Table 4.20.

Table 4.20. Summary Regression of SN Features Influence on TSC and Health						
	Tie Strength	Age	Gender	Religious	Chronic	Live Alone
	β	β	β	β	β	β
TSC Medications	.20†					.10
TSC Symptoms	.19†					.23*
TSC Activities	.29**					.07
TSC Health	.16					.14
Phys Function	-.08					.05
Physical Role	-.08					.19†
Bodily Pain	.00		.11		-.20†	-.18
Gen Health	.13	.42***			-.07	.07
Vitality	.28**				-.18†	.15
Social Function	.17	.17†		.20†		.16
Emotion Role	.13				-.18	.15
Mental Health	.33***	.23*			-.28**	.14
Physical Sum	.10					.11
Mental Sum	.33**	.19†				.14

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

Table 4.20. *Tie Strength*: Network Size (1-10: List all the people you are close to, talk to regularly up to 10); Reciprocity (Yes/No: Do you give support to this person who you receive support from?; Emotional Closeness (1-3: On a scale of 1-3, how close are you to this person (1 closest, 2 somewhat close, 3 not that close); Density (1-5: List the number on the list that know each other – who knows who?; Proximity (Yes/No: Does this person live within an hour; Activation of Support General (Yes/No: Do you ask this person for help when you need it"; Activation of Support Sick (Yes/No: Do you ask this person for help when sick or have a health concern? *Co-variates:* Age, Gender, Religious, Total Chronic (no anxiety/depression), Live Alone. *Therapeutic Self-Care*: (Meds, Symptoms, Activities, Health); *Health:* (Physical Function, Physical Role Bodily Pain, General Health, Vitality, Social Function, Emotional Role, Mental Health Sum, Physical Health Sum)

4.9 Aim 3: Identify the Relationships Among Social Support, Therapeutic Self-care and Health.

This aim, first, explored the relationships among social network functions (emotional, information, tangible, affection and interaction support) (Sherbourne & Stewart, 1991) and the four domains of therapeutic self-care behaviors (Doran et al., 2002). It was hypothesized that social networks with higher positive social support are associated with higher levels of therapeutic self-care.

Using the Pearson correlation co-efficient statistic, a strong positive correlation

between total social support and all domains of therapeutic self-care is appreciated. Stronger correlations are noted is association between types of support and self-care activities and management of symptoms. It is noted that the strength of the relationship between social support and medication-management while positive in relation to emotional, informational and tangible support, there is no noted relationship strength with affection or interaction support. Correlation statistics and values of the interaction between the variables of social support and therapeutic self-care are shown in Table 4.21.

Table 4.21. Summary of Correlations for Social Support and Self-Care

	Social Support				
	Emotional/ Information	Tangible	Affection	Interaction	Total
	r	*r*	*r*	*r*	*r*
TSC Medications	.22*	.31**	.19†	.17	.27*
TSC Symptoms	.25*	.36***	.25*	.28**	.33***
TSC Activities	.34***	.45***	.37***	.40***	.45***
TSC Health	.26*	.35**	.22*	.38***	.34***

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

Correlations of total support indicate statistical significance in relationship to all domains of therapeutic self-care. These correlations show the positive associations between the behavioral mechanism of social networks and health behaviors of self-care (Berkman, 2010). Multiple linear regression is used to further explore the relationship between the independent variable of total social support and therapeutic self-care behaviors.

4.9.1A3Qa: What the Relationship Between Social Support and Therapeutic Self-care Medications? H_A: Social support will be positively related to an increase in therapeutic self-care medications.

Multiple linear regression was run to explore the relationship between social support, identified covariates religiosity, and living alone and the dependent variable of therapeutic

self-care of medications. The results of the regression indicated that there was no significant relationship between social support and therapeutic self-care in medication management (β=.21, *p*=.051) nor was there any significance in the relationship between the co-variates religiosity (β =-.20, *p* =.054) and living alone (β =.09, *p* =.42). The results of the regression R^2 =.12, F (3,85) =3.7, *p* = .014. A summary of the regression model is below in Table 4.22.

Table 4.22. Summary of Regression Therapeutic Self-Care Medications

	β
Total Support	.21†
Religious	-.20†
Live Alone	.09

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This regression suggests there may be some influence on self-care of medications through the behavioral mechanism of social support and religiosity, but it is not significant (Berkman, 2010) in this sample.

4.9.2 A3Qb: What is the Relationship between Social Support and Therapeutic Self-care Symptoms? H_A: Social support will be positively related to an increase in therapeutic self-care symptoms.

Multiple linear regression was used to test the relationship between social support and the covariate of living alone, and therapeutic self-care symptom management. The results of the regression R^2 = .14, F (2,86) =7.01, *p* =.002, indicated a positive significant relationship between social support and therapeutic self-care in symptom management (β=.29, *p*=.005). Regression analysis summary of beta co-efficient values can be found below in table 4.23.

Table 4.23. Summary of Regression Therapeutic Self-Care Symptoms

	β
Total Support	.29**
Live Alone	.18†

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This result shows there is an influence on self-care of symptoms through the behavioral mechanism of social support and a weak positive association is found in the model in the relationship between living alone and therapeutic self-care of symptoms (Berkman, 2010).

4.9.3 A3Qc: What is the Relationship Between Social Support and Therapeutic Self-care Activities? H_A: Social support will be positively related to an increase in therapeutic self-care activities.

A multiple linear regression was run to test the relationship between social support, living alone and therapeutic self-care activities. The results of the regression indicated that social support was significantly positively related to therapeutic self-care activities (β =.46, *p*=.000). The results of the regression R^2 = .21, F (2,85) =11.0, *p*=.000. Regression analysis summary of beta co-efficient values can be found below in Table 4.24.

Table 4.24. Summary of Regression Therapeutic Self-Care Activities

	β
Total Support	.46***
Live Alone	-.01

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This shows there is significant influence on therapeutic self-care activities that support the management of chronic conditions through the behavioral mechanism of social support (Berkman, 2010).

4.9.4 A3Qd: What is the Relationship Between Social Support and Therapeutic Self-Care Health? H_A: Social support will be positively related to an increase in

therapeutic self-care health.

Multiple linear regression was used to test the relationship between social support and living alone and therapeutic self-care of general health. The results of the regression R^2 = .12, F (2,86) =5.8, *p* =.004. Social support is positively related to participants therapeutic self-care in the domain of general health (β =.32, *p* =.003). Regression analysis summary of beta co-efficient values can be found below in Table 4.25.

Table 4.25. Summary of Regression Therapeutic Self-Care Health

	β
Total Support	.32**
Live Alone	.08

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

There is a significant influence on general health self-care through the behavioral mechanism of social support (Berkman, 2010). In summary of the influence of social support on therapeutic self-care there is a significant positive relationship between social support and symptom, activities and general health therapeutic self-care based on these regression analyses results.

4.9.5 Social Support and Health

The second question in this aim investigated the relationships among social network functions using the *Medical Outcomes Study: Social Support Survey - MOS-SSS* (Sherbourne & Stewart, 1991) as a total score and health. The hypothesis was social networks with higher social support, as a social network function, are associated with higher levels of health. Using the Pearson correlation co-efficient statistic, a strong positive correlation in total social support with health across all items measuring health was explored. Stronger correlations are noted is association between types of social support, emotional role and mental health. Correlation statistics and values of the interaction between

the independent variable of social support and the dependent value of health are shown below in Table 4.26.

Table 4.26. Summary of Correlations Social Support and Health

	Social Support				
	Emotional/ Information	Tangible	Affection	Interaction	Total
	r	*r*	*r*	*r*	*r*
Physical Function	.01	-.04	-.11	-.07	-.05
Physical Role	.13	.02	.10	.14	.12
Bodily Pain	.01	-.13	-.14	-.17	-.10
General Health	.18	.03	.11	.07	.13
Vitality	.10	.08	.24	.19	.16
Social Function	.18	-.01	.18	.23*	.18
Emotional Role	.23*	.10	.30**	.32**	.28*
Mental Health	.25*	.22†	.33**	.30**	.32**
Physical Sum	.00	-.11	-.16	-.15	-.10
Mental Sum	.28*	.19	.43***	.41***	.37***

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

Based on the correlation table above there is a significant correlation between social support as a function of one's social network and socio-emotional health as measured by the Optum™ SF-12v2® Health Survey (2015). Emotional role is significantly correlated with emotional/information, affection, interaction and total support. Summative mental health is significantly correlated with emotional/information support, affection, interaction support, and, total support. It is noted that there is no correlation significance between tangible social support and health among this sample.

4.9.6 A3Qe: What is the Relationship Between Social support and Perceived Health?

H_A: Social support will be positively related to an increase in perceived health.

In analysis of co-variate influences, age was found to be positively correlated with general health. In exploring this finding, regression was run to predict general health as an outcome from total social support, and co-variates age and living alone, $R^2 = .18$, $F(3,85) = 6.14$, $p = .003$. Only one variable, age, added statistically to the prediction, age ($\beta = .38$, *p*

=.000). Regression analysis summary of beta co-efficient values can be found below in Table 4.27.

Table 4.27. Summary of Regression General Health

	β
Total Support	.13
Age	.38***
Live Alone	.07

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This suggests that while social support is not predictive of general health there is significant relationship between age and general health which in this sample suggests that higher age was associated with a higher state of perceived general health.

4.9.7 A3f: What is the Relationship Between Social Support and Emotional Role?

H_A: Social support will be positively related to an increase in emotional role.

Multiple linear regression was run to test the relationship between social support, living alone and emotional role. The multiple regression model shows the statistically significant positive relationship between social support and emotional role as an aspect of health, R^2=.11, F (2,86) =5.29, *p* =.007. Total social support added statistically to the model (β=.29, *p*=.006). Regression analysis summary of beta co-efficient values can be found below in table 4.28.

Table 4.28. Summary of Regression of Emotional Role

	β
Total Support	.29**
Live Alone	.11

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This data shows the influence of social support on emotional role. This suggests there is an influence on emotional role through the behavioral mechanism of social support (Berkman, 2010).

4.9.8 A3Qg: What is the Relationship Between Social Support and Mental Health?

H_A: Social support will be positively related to an increase in mental health.

Multiple linear regression was run to test the relationship between total social support, living alone, age and mental health. The multiple regression model statistically significantly indicated the relationship between social support and mental health, R^2 =.21, F (3,85) =7.26, *p* =.000. Regression analysis summary of beta co-efficient values can be found below in Table 4.29.

Table 4.29. Summary of Regression of Mental Health

	β
Total Support	.37***
Age	.14
Live Alone	.14

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

This data shows the predictive influence of social support with mental health through the behavioral mechanism of social support (Berkman, 2010).

4.9.9 Summary: Social Support, Therapeutic Self Care and Health

This aim explored the relationship between the functions of social networks behavioral mechanism (Berkman, 2010) as social support, and the outcomes of therapeutic self-care and health. The first question of this aim tested the hypothesis that higher levels of social support would result in higher levels of therapeutic self-care. Correlation statistics and regression models showed some significant association and regression models substantiated the positive predictive relationship of social supports' influence on symptom, activities and general health therapeutic self-care. This supports, in part, that therapeutic self-care is a behavioral pathway to health influenced by the behavioral mechanism of social support (Berkman, 2010).

The second question tested the hypothesis that higher levels of social support would result in positive health outcomes. Correlation statistics revealed significant associations across psychosocial health measures but not physical health. In multiple regression models presented here, social support predicted mental health and emotional role. This data shows the positive influence of social support on psychosocial health in this sample. A summary of the regressions is listed below in Table 4.30.

Table 4.30. Regression Summary for Social Support, Therapeutic Self-Care (TSC) and Health

	Social Support	Covariates				
	Total Social Support	Age	Gen	Religious	Chronic	Liv Alone
	β	β	β	β	β	β
Medications	.21†			-.20†		.09
Symptoms	.29**					.18†
Activities	.46***					-.01
Health	.32**					.08
Phys Function	-.06					.11
Physical Role	.09					.17
Bodily Pain	-.07		-.15		-.20†	.16
General Health	.13	.38***				.07
Vitality	.19†				-.17	.17
Social Function	.21*	.16		.22*		.19†
Emotion Role	.29**					.11
Mental Health	.31**	.13			-.25**	.17
Physical Sum	-.10					.14
Mental Sum	.37***	.14				.14

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

Table 4.30. Social Support: Total (Tangible, Emotional/Information, Affection and Interaction); *Therapeutic Self-Care*: (Meds, Symptoms, Activities, Health); *Health:* (Physical Function, Physical Role Bodily Pain, General Health, Vitality, Social Function, Emotional Role, Mental Health Sum, Physical Health Sum)

4.10 Aim 4: Does Functional Status mediate the Relationship between Social Network Size and Social Support? H_A: Functional status mediates social network size and support.

This aim examined if functional status mediated social network size and social

support. Functional status defined here as the Optum™ SF-12v2® Health Survey (2015) measure of physical function. The hypothesis was that lower functional status leads to smaller social network size and less overall social support. The four-step approach (Baron & Kenny, 1981) where several step-wise regression analyses are conducted to examine the coefficients in each step to determine a mediator effect was applied for this analysis. In step one, exploring network size and social support, a step-wise multiple linear regression was performed. Network size was a significant predictor of social support (β =.49, *p* =.000). Participants with a larger size social network had increased social support.

In step two, of the regression analysis, when adding the mediator variable physical function (β = -.04, *p* =.72), there were no significance. Therefore, there was no mediating effect of functional status between social network size and social support, thus, concluding the process at this step.

4.11 Aim 5: Identify the Relationship Between Social Support, Perceived Control and Attributed Dignity.

In meeting the secondary and exploratory aims of this study, this aim, investigated associations among social network functions, perceived control and attributed dignity. It was conceptualized that sense of control and attributed dignity may be influenced by the perception of overall support as a behavioral mechanism (Berkman, 2010) as a social network influence. The influences of social support in relationship with sense of control and attributed dignity are presented below.

4.11.1 A5Qa: What is the Relationship Between Social Support and Total Perceived Sense of Control? H_A: Social support will be positively related to an increase in perceived control.

The first question in this aim investigated the association among social network functions, social support, and perceived control. Sense of control is a perception of one's resources in the context of one's environment. Sense of control includes perception of internal and external resources and agency (Wallhagen,1993; Wallhagen,1998). The hypothesis was that higher social support is associated with higher levels of control. The Pearson correlations are reported in Table 4.31.

Table 4.31. Summary of Correlations Social Support and Sense of Control

	Social Support				
	Emotional/ Information	Tangible	Affection	Interaction	Total
	r	*r*	*r*	*r*	*r*
Resources	.18†	.23*	.31**	.32**	.29**
Control	.25*	.24*	.31**	.33**	.32**
Total	.22*	.26*	.34***	.36***	.33**

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

Correlations of social support with sense of control indicate statistical significance in all domains of sense of control. Multiple linear regression tested the relationship between the independent variable of total social support with total sense of control and living alone as presented in Table 4.32. Social support was statistically significant in a positive relationship (β =.33, p =.003) with sense of control, R^2=.11, F (2,86) = 5.2, p =.007. Social support is positively associated with sense of control.

Table 4.32. Summary of Regression of Sense of Control

	β
Total Support	.33**
Live Alone	.01

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

4.11.2 A5Qh: What is the Relationship Between Social Support and Attributed Dignity? H_A: Social support will be positively related to an increase in attributed dignity.

The second question investigated social network functions and attributed dignity with the hypothesis that social network functions are positively associated with attributed dignity: the more support you receive the more attributed dignity you perceive. The Pearson correlations reported in Table 4.33 indicated statistically significant correlations of total support with attributed dignity as measured by the Jacelon Attributed Dignity Scale (JADS) (Jacelon, Dixon & Knafl, 2009). Higher strength of correlation is shown between social support with self-value and perceived value from others.

Table 4.33. Summary of Correlations for Social Support and Attributed Dignity

	Social Support				
	Emotional/Information	Tangible	Affection	Interaction	Total
	r	*r*	*r*	*r*	*r*
SRO	.17	.15	.29**	.23*	.23*
BRO	.21*	.14	.23*	.20†	.23*
SV	.37***	.37***	.43***	.44***	.46***
PVO	.31**	.36***	.41***	.44***	.42***
Total JADS	.37***	.32**	.46***	.46***	.47***

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

Table 4.33. SR0-Self in relation to others; BRO – Behavior with respect toward others; SV – Self-value; PVO – Perceived value from others.

Correlations of social network functions of total support indicate statistical significance in relationship to all domains of attributed dignity. Multiple linear regression was used to test the relationship between social support and the covariate of living alone, with the dependent variable of attributed dignity as reported in Table 4.34.

Table 4.34. Summary of Regression of Attributed Dignity

	β
Total Support	.44***
Live Alone	.10

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

The results of the regression R^2 = .22, F (2,79) =11.1, *p* =.000, indicate that social support is significantly positively related to attributed dignity (β =.44, *p* = 000). This data

shows the influence of the behavioral mechanism of social networks, social support, are strongly associated with attributed dignity.

4.11.3 Summary: Social Support, Sense of Control and Attributed Dignity

This aim explored the relationship between the functions, behavioral mechanisms, of social networks, defined here as social support, and the outcomes of sense of control and attributed dignity. The first question of this aim tested the hypothesis that higher levels of social support would result in higher levels of control, given an increase perception of access to resources and sense of agency (Wallhagen,1998). Correlation statistics (See Table 4.35) and regression models showed this significant association and regression models substantiated positive relationships of social supports' influence on perceived sense of control.

The second question tested the hypothesis that higher levels of social support would predict increased perceptions of attributed dignity. Correlation statistics revealed significant positive correlations between social support and attributed dignity with higher significance in self in relation to other and self-value. In the regression model presented, social support was positively related to attributed dignity. For a summary of the regressions see Table 4.35.

Table 4.35. Regression Summary Social Support, Sense of Control and Attributed Dignity

	Social Support	Covariates				
	Total Social Support	Age	Gen	Religious	Chronic	Liv Alone
	β	β	β	β	β	β
Resources	.27*			-.11		.21†
Control	.33**	.18†			-.21*	.03
Total	.31**					.01
SRO	.20†			-.10	.20†	.21*
BRO	.23*				.19†	.09
SV	.43***		.19†			.16
PVO	.39***			-.08		.10
Total JADS	.44***					.10

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

Table 4.35. Sense of Control (Resources, Control, Total); Attributed Dignity (Self in Relation to Others (SRO), Behavior with respect to others (BRO), Self-Value (SV), Perceived Value Others (PVO). *Co-variates:* Age, Gender, Religious, Total Chronic (no anxiety/depression), Live Alone. *Therapeutic Self-Care*: (Meds, Symptoms, Activities, Health); *Health:* (Physical Function, Physical Role Bodily Pain, General Health, Vitality, Social Function, Emotional Role, Mental Health Sum, Physical Health Sum)

4.12 Summary of Quantitative Findings

Through presenting these findings on the social network features and functions effects on therapeutic self-care, health, sense of control and attributed dignity of this sample, there is evidence of the influence of both features and functions of social network effects on therapeutic self-care behaviors and perceived health. Social ties influence therapeutic self-care behaviors, vitality and mental health. Social support, as an important function of these social relationships, influences therapeutic self-care, emotional role, mental health, sense of control and attributed dignity. A summary of all statistically significant correlations between social network features and functions is listed below in Table 4.36.

4.36. Summary of Statistically Significant Correlations

Social Network Variables	TSCM	TSCS	TSCA	TSCH	VI	SF	ER	MH	MS	SOC	JADS
Tie Strength	†	*	**	-	**	-	-	**	***	-	**
Social Support											
Emotion/Info	*	**	***	*	-	-	*	*	*	†	***
Tangible	**	***	***	**	-	-	-	†	-	*	**
Affection	†	*	***	*	-	-	**	**	***	***	***
Interaction	-	**	***	***	-	*	**	**	***	***	***
Total Support	*	***	***	***	-	-	*	**	***	*	***

†p ≤ .10. *p ≤ .05. **p ≤ .01. ***p ≤ .001

Table 4.36. TSCM: Therapeutic Self-Care Meds, TSCS: Therapeutic Self-Care Symptoms, TSCA: Therapeutic Self-Care Activities; TSCH: Therapeutic Self-Care Health; VI: Vitality; SF: Social Function; ER: Emotional Role; MH: Mental Health; MS: Mental Health Summative; SOC: Sense of Control; JADS: Attributed Dignity

CHAPTER 5

QUALITATIVE FINDINGS

5.1 Thematic Qualitive Analysis of Social Networks, Self-Care, and Health

Important to the overall analysis of the complex ways in which social networks influence self-care and health among older people living with multiple chronic conditions, the sixth aim utilized open-ended semi-structured interviews (see Appendix D, Interview Guide) and a thematic analysis (Braun & Clarke, 2006) to identify social network influences on self-care among older adults managing multiple chronic conditions. Standards for Reporting Qualitative Research guided this research process (O'Brien et al., 2014). The following three dominant themes emerged to describe social network influences on health and self-care behavior: 1) Small Social Circles, 2) You Have to Learn to Ask for Help and, 3) Just A Phone Call Away. Interviews were completed until saturation was reached (N=12).

5.1.1 Small Social Circles

Social networks were reportedly small in later life and resulted from losses of key close relationships (friends moving away, deaths, changing interests) and at times the replacement of network members to sustain a consistent circle; often with friends replacing spouses. Selection of relationships that were beneficial socio-emotionally were emphasized and at times a deliberate narrowing of the network occurred to a size that was both socio-emotionally beneficial and manageable. The "work" of relating itself was described. Companionship was valued among network members they were more familiar with and trusted.

> *Well, my circle is smaller but the number of real, true friends I have hasn't fluctuated since I can remember. I've always had about ten very close people, two or three that are especially close.*

> *People I am close to are dwindling. I have a close friend that I meet with once a month if I'm lucky. Bottom line is: when you're poor, people don't like to hang out with you. [laughs] But when you're old, it gets worse, and then if you add sickness – right? - it gets a triple whammy.*

In these quotes participants described the essential nature of small close social circles and how aging, illness, and resources influence one's social circle. Relationships that offered psychosocial support were described as close and were positive influences that were missed if lost.

> *I had two very close friends who moved away, and we would do everything together. Like, go to breakfast and go walking. Especially one, one of them. I miss that, I don't have anyone like that now. But I still have a lot of close people in my life, but those two people I miss.*

Although some relationships were substituted for others as the participant's social circles contracted, this quote demonstrates the irreplaceable nature of people within the social network. Participants described actively avoiding relationships that were stressful, harmful or negative to the best of their ability.

> *If I've had any relationships that haven't been healthy – and I would say primarily emotionally – I haven't kept up with them.*

However, managing relationships was not always possible if the negative influence was someone the older person lived with or had an enduring relationship. This participant described a relationship that effected their health in a negative way because of the social stress it created, but the relationship was valued despite the stress it caused.

> *When it [the relationship] is drastically not good for me, I remove myself from the social relationship. The only situation I don't remove myself from is my relationship with my daughter… She's my only child. I don't want her involved in my business, I don't trust her to take care of my mental or physical health [but I want to stay connected to her].*

Health was described as having an influence on size and intimacy of a person's social network. Poorer health and function from chronic illness limited one's ability to have a recreational social life or social experiences that required "getting out." These included

participating in civic activities and engaging in larger social and more casual social environments. Instead, social interactions with family and friends, were relied on and were less casual and yet more intentional. Fluctuations in health also influenced access to social relationships and choice of relationship; often resulting in greater reliance on family, close friends and formal caregivers as illness advanced.

> *My health is declining and [it impacts] the fact of my getting around. I don't get out much. I used to go to town meetings and this and that. I don't get out much to see the people that are friendly but not my close little circle of real friends. We have a bus that takes us every Tuesday, shopping, if we want to go, but I'm so lame and so used up that I don't go every Tuesday, I go once a month. But I can call on any of those three people I told you [if I need help] and, if I had to and I do, but I don't like it.*

Consistent with the trajectory of many chronic conditions where there may be patterns of acute events superimposed on chronic conditions and times when health status varies, participants expressed an understanding and expectation of fluctuation in health and noted how support needs also shifted during these changes. Psychosocial support and activities that influenced health were most evident in the value placed on shared interests and companionship.

> *But, singing is the heart of it for me. Some of my most important relationships are with my daughter because she's a singer…. I have that relationship with my wife and the relationships with the two groups that I sing with right now, that are choral groups, a church choir and my men's acapella chorus.*

In the quote above, one participant demonstrates that an activity, such as singing, can provide relationship engagement within small social circles because of a shared interest. Social networks change constantly across the life span. However, as individuals age and health problems increase, social circles decrease in size and rely more on a few close relationships.

5.1.2 You Learn to Ask for Help

One open-ended question focused on gaining an understanding of the response to a

question that was consistently difficult for participants to answer in the first survey interview. The question was from the Medical Outcomes Social Support Survey and asked, "*do you have someone to help you if you were confined to bed*"? Participants expressed difficulty asking for help or "not wanting to ask", yet, described how, overtime, they became more confident in asking for help especially when there was a significant need. While unsolicited help was greatly appreciated, it remained much harder to ask for certain tangible supports.

Asking for help had a much greater symbolic representation than the resource itself. For example, asking for help symbolized a loss of independence or created concern over future ability to remain independent. Symbolically, asking for help influenced how participants described their identity and associated asking for assistance with debility and aging. Asking for help also implied the potential for loss of self in terms of functional roles. Difficulty in asking for help was described as needing to learn, "to get over" it, and was negotiated and taught through experiences where they delayed seeking out the needed support or denied a need at a greater cost to health or independence. Participants appreciated assistance that was not "asked for" but was anticipated or formally initiated.

> *I don't want to ask, and I want to be independent. I love the freedom that I can still drive, and I can still do my checks and I can do everything I ever did except for lifting and labor things. You know, manual labor. But, I don't know. Sometimes I don't realize how old I am to myself.*

Another participant explained,

> *I think just recently things have really picked up and I'm doing so much better. But for a few months I was not even able to take the dog out for a walk. And I needed somebody to come just to take her around the block. I would have to ask please come with me I'm afraid I'm going to fall … and it bothered me when I had to ask. The person that I live with doesn't realize half the time that I really need assistance and I must ask for it, and then he's more than willing to help. Whatever I ask him to do he'll do, but I hate to have to ask.*

A third person explained the challenge of asking for help this way;

> *My daughter would come over and say "Mom, do you want me to help you wash the kitchen floors?" or something else and I'd say, "No, no" but another daughter would just come and start to wash it, you know. So, it's… I can't accept the fact that I do need help in a lot of situations but if somebody just comes and does it, then I'm very pleased. Might feel a little guilty about it but I'm still very pleased that they +just automatically offer to do it without me having to ask. It's almost like if they must ask me for it, then that means I'm not able to do it. And they have to help me do it and that bothers me too.*

Asking for help, meant asking primarily for tangible resources such as yard-work, house work, instrumental activities of daily living, and was often influenced by state of health and consistently negotiated as demonstrated in the preceding quotes. Learning to ask for help, largely consisted of coming to terms with the fact that by not asking the individual would have to go without a resource or be in a position that might further compromise their health. Overtime, the longer and more demanding the needs, the more help was requested both through formal and informal supports. The quotes below demonstrate the challenge in knowing when there was a need to ask for help, despite there being an available resource or health connection.

> *I think that I'm Superwoman and many times I do things I shouldn't do. So, I'm starting to learn to ask for help. I've noticed a big change in one year. Generally, by now, I've planted tomatoes and put out my flowers and this year I haven't done it. I do have to ask for help now because when I haven't done it, I've hurt myself and things like that.*

> *I guess I got to the point where I just knew I had to do something. Because I couldn't get out and fix myself anything to eat at that time, I was just… Well, I wasn't hungry to begin with and nothing looked good or tasted good and so I pushed my little button on my health connection thing there and they took me to the hospital and that's when I found out how really sick I was.*

The quotes above demonstrate that instrumental help was difficult to ask for. Needing instrumental help threatened participant's independence. They only sought help when their

physical condition had deteriorated sufficiently that they could not meet their needs. When that happened, the participants reported "Learning to Ask for Help."

5.1.3 Just A Phone Call Away

Many devices such as walkers, canes, wheelchairs, ramps, calendars, medication reminders, lists, and telephones assisted in self-care activities. All devices were used to gain access to things individuals needed to support their self-care and health as well as their social relationships. The telephone was, by far, the most important "tool" described for managing participants' health and connecting them socially to their network. The phone was a place where social support was widely received through daily calls, reminders, checking in, and informal reaching out in terms of conversation and companionship.

> *I would say there's about 10 people that I call. Two that I talk with every single day. The one that gives me a ride, she is, like my caretaker, she calls me every day to make sure I'm ok. I can call her any time.*
>
> *The phone calls. I get overwhelmed sometimes, because I have to make all the decisions by myself; I have no family and it's getting a little harder because of my physical disabilities. So, when I get down, I call my friend, it is like going to a doctor who can make you mentally well – a telephone call.*
>
> *I broke my hip…My husband was awesome, because I needed assistance getting out of bed. I had my cellphone and I just called him whenever I had to get up and go to the bathroom and he got my legs off the bed.*

Participants used the phone for frequent and/or immediate connection. It is a tool for social contact and assistance that supported their health and security. A phone call was an activity (picking up the phone and calling) they asserted that was part of their self-care practices and provided access to psychosocial and tangible support.

5.1.4 Summary: Thematic Qualitive Analysis

Themes generated from analysis of the qualitative interviews described important socio-cultural nuances. Social networks, while small, were populated largely by close

friends. State of health and access to resources influenced participant's social relationships. In navigating fluctuating states of health, asking for help was consistently described as a process of learning. Participants emphasized a distinct resistance to asking for help. Asking for help had symbolic meaning and reinforced a strong cultural social norm favoring ability and independence over needing assistance and support. Autonomy is represented as a choice in activating support or not. While tangible support was largely emphasized in these descriptions in describing social network influences on health, telephone communication was an important technology that offered access to psychosocial and tangible support that was reciprocal. These findings will be further explored in combination with the descriptive and quantitative findings in the discussion in Chapter 6.

CHAPTER 6

DISCUSSION

6.1 Introduction

This chapter discusses the study findings of the quantitative and qualitative analyses. The discussion addresses the principle findings answering the research questions, strengths and limitations, future recommendations, and conclusions. This research study included a sample of eighty-nine older people in the community and took place between May 2016 and July 2017. The purpose was to investigate social network influences on the self-care behavior, health, perceived control and attributed dignity among older persons living with multiple chronic conditions in the community. The goal was to understand the influence of social ties on health behavior and health outcomes among an older population living with and managing multiple chronic health conditions.

6.2 Multiple Chronic Conditions: A Total Phenomenon

Living with multiple chronic conditions was a central variable for inclusion in the study. Chronic conditions are diseases and states of health that are known to vary widely, influence once another, require self-care, influence function (Gulley et al. 2018) and relationships (Martire & Helgeson, 2017). Quantification of multiple chronic conditions and associated health effects and self-care needs are difficult to measure. The effect of living with chronic conditions, as evident in this study, extends beyond physical function to a greater totality of experience that includes psychosocial experiences and social responses overtime.

This view of multiple chronic conditions is consistent with the conceptualization of the illness phenomenon as a total biopsychosocial experience (Borg, Hallberg, & Blomqvist,

2006; Rolland, 1988). Conceptualization and measurement of multiple chronic conditions requires social as well as functional dimensions within the context of a broader perspective of health. Addressing chronic conditions from the perspective of the social network may better address some of the challenges in managing chronic conditions and their treatments on the community level where people in this study lived in creating more integrated social health care. Of interest, while older age itself is often associated with a higher number of chronic conditions, in this sample, older age was positively associated with better physical and mental health.

6.3 Social Network Features Effect Therapeutic Self-Care and Mental Health

Social networks were described based on participants naming emotionally close persons to their network list and applying the theoretical Convoy Model (Antonucci, 1986) of social relationships. This model proposes that individuals are surrounded by supportive relationships of varying degrees of closeness (Antonucci, Ajrouch & Birditt, 2013). While there are many types of social relationships that may be very important, in this research, emotional closeness and contact frequency was emphasized and demonstrates that close relationships are resources in supporting health needs among older adults as well as influencing health positively and negatively in complex ways (Antonucci et al., 2013; Berkman 2010; Berkman et al., 2000; Gurung, Sarason, & Sarason, 1997; Reeves et al. 2014, Smith & Christakis, 2008; Uchino, 2009).

It was hypothesized that social network features would influence self-care behavior and health; networks with stronger social ties would result in higher levels of self-care and health because of how social relationships influence health behavior. This hypothesis was partially supported. Tie strength showed a positive relationship with one dimension of

therapeutic self-care activities, mental health and vitality, but not physical health. Strong social ties influenced the therapeutic self-care activities people in this study under-took to manage their chronic conditions. Social relationships tie strength may influence various self-care behaviors in different ways. In this study there was a significant association with tie strength and self-care activities but not medication, symptom or general health self-care. It is possible that certain aspects of self-care are socially influenced. Some aspects of self-care may be more privately managed or are more indirectly influenced by social relationships.

While there was a significant relationship between network variables and mental health there was no impact on physical health. This may be because physical health is indirectly related to social network variables and in this study only direct effects were tested. Effects of social networks on the physical health of chronic conditions could be through the influence on mental health. This supports a buffering hypothesis where positive social relationships may buffer stress and improve coping and self-care which then contributes to physical health. Consistent with a growing body of research (O'Malley et al., 2012; Pietromonaco, & Collins, 2017; Valente, 2010), in this study social network features, social ties, influenced mental health.

6.3.1 Social Network Functions Effect Therapeutic Self-Care and Mental Health

It was hypothesized that positive social support would positively influence self-care and health. Social support did influence therapeutic self-care and mental health outcomes among study participants consistent with existing research findings (Berkman et al., 2010; Borg, Hallberg & Blomqvist, 2006; Cornwell & Waite, 2009; Gallant, 2003). Total social support was associated positively with activities, symptoms and general health therapeutic self-care, emotional role, and mental health. This finding emphasizes how social network

members may be a beneficial influence on self-care through affective processes. Findings associated with social support extend previous research findings that indicate the importance of psychosocial support (Lin, Li, Ji, & Jie, 2015) among older adults living with chronic conditions especially those with high levels of anxiety, depression, and chronic pain.

The importance of social support in relation to health was further described in the qualitative interviews, particularly in the theme of support 'being a phone call away.' The phone, predominant in participants' social relationships (*"She calls me every day to make sure I am ok")*, was the medium where support was exchanged and activated with frequency. Participants expressed activating support, their needs to care for themselves, through calling on close relationships ("*When I get down I call a friend").* Accessing social support for tangible needs was described as influencing physical health episodically (*"I had my cell-phone…I just called him whenever I needed to go to the bathroom").* Social support, as a behavioral mechanism, influences self-care behaviors and mental health (Berkman et al., 2010). This research study supports that social network features are associated with increased self-care and mental health.

6.3.2 Support Type and Health

In this sample, the type of social support (emotional/informational, affection, and interaction) were positively associated with mental health. There was no association between tangible support and mental health. The role of tangible support in self-care was, however, expanded upon in the qualitative findings theme: 'learning to ask for help.' Participants expressed ambivalence in seeking assistance ("*I hate to have to ask")* related to self-care and health needs. Help, described in the qualitative interviews as support, was primarily the need for tangible resources associated with a change in health, and need for

assistance with activities of daily living as opposed to psychosocial support. Participants described the need to learn to ask ("*get over not wanting to ask*") because of the risk they might be taking to their health if they did not ask. Tangible support was symbolically associated with greater loss of independence and was difficult to negotiate in social relationships especially among people with whom the participants were close. In understanding social support influence on health there is a distinction between psychosocial and tangible support. This may extend prior research that has shown that needing higher levels of tangible support overtime had a negative overall impact on mental health (Bolger et al., 2000; De Leon et al., 2001; Reinhardt et al., 2006). Distinctions in support type, therefore, are important to make.

6.4 Physical Function, Social Network Size and Social Support

It was hypothesized that physical function would mediate social network size and social support. This hypothesis was not supported. Physical function did not mediate network size and social support. However, in the qualitative interviews, declining physical function was described as influencing size of social networks favoring small networks of close relationships over more informal relationships (*"My health is declining and the fact of my getting around…. I don't get out much to see people who are friendly but not my close little circle of friends").* Consistent with existing research (Cornwell et al., 2008; Cornwell et al., 2015; Lang et al. 1994) on social networks in aging, among the participants in this study, social networks are often small in later life. Changes in network membership and size may result from more complex influences than the mediation of physical function. Network size may be indirectly associated with how individual physical function influences access to social support.

Reasons for small social network size can range from losses of relationships to a deliberate narrowing of the network to what is meaningfully beneficial and able to be managed consistent with socio-emotional selectivity theory that emphasizes the need to attend to both positive and negative relationship qualities and select relationships that are beneficial, as a means of managing health and present time bound health needs (Antonucci, Ajrouch & Birditt, 2013; Carstensen, 1992; Carstensen, Fung, & Charles, 2003).

6.5 Friends

Friends were the most represented role of social network members among this sample. Friend networks may be valued for the type of support offered as interaction, companionship and affection that is reciprocal and support one's social role. Most people in this sample did live alone. Living alone was not associated with any influence on health but living alone may be associated with more friend-type networks.

Because of the influence of social networks on health behavior and health there may be an especially important role for friends. Friends are supportive across time (Fiori eta al., 2006), with most relationships enduring over many years. Friends may have an even more important role in leveraging support and may be easier relationships to manage because of their association with higher reciprocity and are chosen relationships. Access to friend networks may be limited in times of significant health changes where they could be beneficial. The role of close friend networks is clearly important to health.

6.6 Social Network Functions Effect Sense of Control, Attributed Dignity

Social support was hypothesized to be positively associated with sense of control and attributed dignity. The significance of personal control and how older adults living with multiple chronic conditions perceive control is understood here in association with their

perception of social support as a predictive influence on sense of control (Johnston, Brosi, Hermann, & Jaco, 2011) and attributed dignity. Social support among close network members was predictive of sense of control and attributed dignity though total support was more significant in relationship to attributed dignity than sense of control. While attributed dignity and sense of control are distinct concepts, sense of control has been explored in proposed conceptual models of personal integrity among hospitalized adults as an element of attributed dignity (Jacelon, 2003). Sense of control and attributed dignity in this sample are influenced by upstream predictors of social support.

Understanding how best to provide older persons with opportunities to enhance their sense of control through appraisal of their perceptions of social support may advance our understanding of overall relationship quality. More supportive relationships foster more of a sense of control and attributed dignity. Predominantly friend relationships may offer an explanation specific to how social roles are negotiated among peers versus family members lending a greater sense of control and attributed dignity among predominantly friend type networks. Additionally, future investigation on relationship type (family versus friends) could offer important information about the nuances of sense of control and attributed dignity in how support and control are negotiated in social relationships and changing health status over time.

6.7 The Language of Self-Care and Cultural Meaning

While the actions one takes to care of themselves are, by and large, described in the literature on a highly individual level (self-care, self-management, symptom self-monitoring) consistent with a western cultural perspective in relation to one's care for one self, clearly in the social network research on health, there is a larger influence on this care

beyond the self that consistently links social relationship influences to health outcomes (Berkman, 2010; Cornwell & Laumann, 2015; Heaney & Israel, 2008; Holt-Lunstad, 2018). This is in sharp contrast to the biomedical constructs that dominate the production of many interventions that narrowly address chronic health conditions as singular disease states to be controlled on the individual level until a functional challenge or loss asserts the need for additional "care".

Questioning the concept of "self-care" to offer more fitting language consistent with a social network influence such as "supportive", "collaborative" or "cooperative" considers the emerging understandings of the ways in which individual social networks influence behavior. Language and measures of supported, collaborative care or cooperative care of chronic conditions becomes an important distinction when considering the unit in which nursing interventions focus. The language of self-care also becomes important to be able to clearly identify and make visible the influence of informal caregivers, friends, and social relationships in the experience of living with chronic conditions over time. Addressing chronic conditions from the perspective of the social network may better address some of the challenges in managing chronic conditions and their treatments on the community level where people in this study lived in creating more integrated social health care.

6.8 Strengths and Limitations

The strengths of this research are as follows: Mixed methods data collection is congruent with the strength of the theoretical models that underpin the study design (Choy, 2014; Fetter et al. 2013). This study was guided by Blumer's theory of Symbolic Interactionism (1969) that explains the perceptions of social relationships influence on behavior and the meaning of social relationships (Benzies & Allen 2001; Fuhse, 2009;

Pachucki & Breiger, 2010) as an influence on health in older age. Social interactions are contextualized around human needs in managing health as a social and cultural condition.

In addition, using mixed methods and several questionnaires provided an interview structure that varied the question type thereby gathering data on the same concept from several perspectives using both quantitative and qualitative approaches. Using these strategies, encouraged participants to explain their perceptions providing information in how meaning itself was constructed symbolically as a way of explaining relationships (Benzies & Allen 2001). Using this design expanded understanding and helped limit self-response bias.

Strategies used to reduce acquiescence bias added to the strength of this research. Acquiescence bias, a tendency of participants to answer questions to appease the interviewer by answering positively, was intentionally reduced by easing fatigability, despite many study questions, and taking breaks in the interview, and offering the interview to be continued over more than one-time frame. Less demand was placed on the participant by conducting the interview on the telephone and screening for fatigue as built into the survey (Shaw, 1992; Robinson, Shaver & Wrightsman, 2013).

Limitations of the study include the sample. The recruitment method was narrow, only recruiting older individuals from Massachusetts who were connected with aging services. This strategy may have created a sampling bias and thus not capturing a broader range of experiences (Polit & Beck, 2008). The sample was homogeneous, most of the sample were white women who lived alone. There was under-representation across diverse gender, sexual and racial identities. While the sample was consistent with the demographics of older Massachusetts residents, the sample did not reflect heterogeneity of the US

population of older people and is not meant to be generalizable. There was ample representation of multiple chronic health conditions.

This study was under-powered in meeting the requirements seeking to explain the predictive influence of social network features and functions on the outcomes of health behavior and health. To have adequate power a higher number of subjects would need to be enrolled. Despite this, there are areas of significance that are noted in the results. A mixed method design also contributed to a wider description of the results off-setting this limitation (Onwuegbuzie & Collins,2007). Most participants completed the entire survey interview in full and there was very little missing data.

A limitation of the study and opportunity for future development, was the measure of therapeutic self-care. There was poor internal consistency among this sample across the measures subscales. While the total measure of therapeutic self-care had adequate internal consistency, this was not the case of the sub-scales that measured specific self-care dimensions (medication and symptom management, activities and general health self-care). Despite the measures questionable internal consistency across the sub-scales, the data can be interpreted, as it was, in association with the qualitative interviews that described some of these self-care dimensions and other items that asked about self-care activities, in how the data is interpreted. Development of future measures may look more specifically at the dimensions of therapeutic self-care in relation to greater specification in the details of actions that support the complex management of multiple chronic conditions and general health. While many self-care measures exist in the nursing science (Sidani, 2011) this remains a difficult concept to measure and may be even more complex in relation to the self-care of multiple chronic conditions evident in this sample.

Finally, self-report response bias and interviewer effects (Paik & Sanchagrin, 2013) in areas of social network, health and lifestyle report questions are common limitations of survey data (Polit & Beck, 2008). There are limitations of self-report from a purely inferential approach; the strategies used to reduce response bias are listed in the strengths above. This study offers insight into the intersections of the psychological, social relationship qualities, and cultural contexts that are critical to nursing inquiry (Munhall, 2012). Strengths and limitations of this study offer guidance for future research in these areas among the scientific community.

6.9 Implications

6.9.1 Research Implications

This study focused on overall self-care and health and offers an important contribution to nursing science in extending social network research in nursing. Importantly, this study emphasizes the need to develop measurements of cooperative self-care of chronic health conditions to more accurately address the dimensions of this experience and outcome on health.

Future investigation, exploring specific symptoms and chronic conditions typologies (Martin, Grady, Deaconking, McMahon, Zarabzadeh, & O'shea, 2011) in relation to social network variables such as tie strength could be investigated to expand understanding of social network influences on specific symptoms and changes in symptoms of chronic conditions over time. Research in this area could lead to social network interventions that could improve self-care and reduce symptom burden for individuals with multiple chronic conditions.

Social network methods in addressing nursing research questions are important to

future understanding of social care relationships in expanding nursing science. The concept of multiple chronic conditions as a total phenomenon is one that can be advanced with social network methods in nursing research on advanced illness and social care relationships -- a substantive recommendation from this study.

Attributed dignity and sense of control were strongly associated with social support and are areas of future research in distinguishing sense of control and attributed dignity in relation to the upstream influences of network features and different typologies of network membership over time. Extending this research to examine new models of care that emphasize closeness, contact frequency, support and qualities of attributed dignity and sense of control as important measures of community health and home care delivery are future opportunities for investigation.

Changing health status, unstable health or more recent/frequent hospitalization have implications on social relationships. Social isolation may lead to poorer health and more frequent hospitalization. Extending this research to examine the social network features that influence self-care neglect and social isolation among persons living with unstable or poorly managed chronic conditions should be considered. Testing simple technologies to enhance self-care and social networks are an area that is emerging and an important area for nursing to contribute toward.

6.9.2 Practice Implications

As a practice intervention, integrating a focus on the social relationships through development of a real time assessment of intact social network resources could prove helpful. Incorporating this technique could help identify support and help address social support as a meaningful issue, important to health, and an area that older people may

increase agency in how they activate support or not. Including social assessment as part of functional assessment is especially important to health because of the significant influences social relationships have on functional health. This would require better assessment of social health and ways to address health from the level of one's personal network.

For older people receiving community-based care, emphasis is often on physical and tangible needs, but how care is provided, the social interaction, is equally important. Designing structures of health care that utilize small trusted groups of formal and informal caregivers could better integrate social members in the overall delivery of health care in the community. Additionally, as this research study shows – high contact frequency among close network members through simple technologies such as the telephone may be a way of promoting health and supportive care. Psychoeducational interventions may engage individuals and address social skills across the life course and provide additional support in negotiating relationships and health care needs in later life.

6.9.3 Health Policy Implications

This study supports the importance of social relationships on health and supports the need for community-based care systems where informal care is supported. Policies that influence the way health care is delivered should recognize the importance of mental health as a priority across the life span and address the underlying foundational social influences to promote health and prevent harm in older age. Policies that support intentional care coordination that places emphasis on community-based supports in tandem with existing close social networks and local communities can create structures that reduce the risk of social isolation and addresses the complex needs in managing multiple chronic health conditions based on these study findings. While recent policies support family members of

older adults being central to care planning and information within health care these may need to be more inclusive of other roles, such as friends per the determination of the older person.

6.10 Conclusions

In this research, social ties and social support influenced self-care behaviors and mental health. Social support predicted sense on control and attributed dignity. This study reinforces existing social network theories and conceptual models (Kawachi & Berkman, 2001; Berkman et al, 2010) and extends research on the social convoy model (Antonucci, Ajrouch & Birditt, 2013) in the ways emotional closeness supports health in living with multiple chronic conditions in older age. This suggests a new conceptualization of multiple chronic conditions as a total health phenomenon that is highly influenced by social ties.

In extending the research on social support, health and aging, to practice, social networks can be part of organized care models recognizing their influence and activated through increased communication and contact (Wang, 2014) among identified close members. Alternatively, there may be relationships that are difficult to negotiate, undermine health behaviors, and overall health that are important to identify as part of managing chronic health conditions.

The findings of this study challenge perspectives in the way we conceptualize the self in relation to care because of how it is influenced by social relationships while supporting the agency of the individual in their social network. Findings here suggest ways in which health is influenced includes how social support influences sense of control and attributed dignity in living with and managing multiple chronic conditions in older age.

There are important distinctions in the meanings associated with tangible versus

psychosocial support. Older adults may wish to assess specific types of social network support to determine access to resources and emphasize the necessity of psychosocial support in tandem with physical health interventions and tangible resources. Networks create the structure for social support that influences behaviors, the meaning of the relationships, sense of control and attributed dignity and these influence mental health and affective states are particularly important to managing chronic conditions overtime.

APPENDIX A

PRE-SCREENING

Telephone Script

Hello, thank you for your interest in this study on how relationships influence health.

We are conducting this research to understand how social relationships and support (from friends, the community, family etc.) influence your ability to care for yourself and influence your health. The study will take place at your home, at a public location of your choice or by telephone. This will be an interview answering survey questions and will last up to 90 minutes and will be for one session only.

First, if you are interested in participating I would like to ask you a few questions to see if you qualify, is that ok? (Wait for permission to continue)

How old are you? _____

Do you have any chronic health conditions? Yes _____ *No* _____

Could you tell me what those are? List up to 2 _____, _____

Thank you, great. If qualifies (age greater than 65, 2 or more chronic conditions)

Then invite to participate. *I would like to invite you to participate in this research study.*

First, I would like to review the informed consent, we will also review this before the interview and ask for your signature, verbal agreement if you are in agreement.

Do you have any questions? (Pause after asking to invite time to reply – count to 15)

Set up appointment date & time

_____location_____phone_____

Thank you for your time. I am confirming our interview date, time and location.

The consent form was reviewed and completed before our interview.

APPENDIX B

CONSENT FORM

Researcher(s): *Raeann LeBlanc, DNP, PhD (student), Cynthia Jacelon, PhD (faculty sponsor)*

Study Title: *The Effect of Social Networks on Self-Care Behaviors and Health Outcomes among Older Adults Living with Multiple Chronic Conditions*

---

1. What is this form?

This form is called a Consent Form. It will give you information about the study, so you can make an informed decision about participation in this research. We encourage you to take some time to think this over and ask questions now and at any other time. If you decide to participate, you will be asked to sign this form, give verbal approval, and you will be given a copy for your records.

2. WHO IS ELIGIBLE TO PARTICIPATE?

Individuals who are at least 65 years old and older who live with two or more chronic illnesses are eligible to participate.

3. WHAT IS THE PURPOSE OF THIS STUDY?

We are conducting this research to understand how social relationships and support (from friends, the community, family etc.) influence your ability to care for yourself and influence your health.

4. WHERE WILL THE STUDY TAKE PLACE AND HOW LONG WILL IT LAST?

The first phase of the study will take place by telephone interview. The study will last up to 90 minutes and will be for one session only. You will also be invited to participate in a follow up interview at a later date that will take place face to face at an agreed-on location or your home. This will be for an in-depth interview. You do not need to participate in both sessions. By proceeding to answer the question on the telephone you will be giving your consent. If you would like to be considered for the second interview you will be called, and this form signed in person before the study.

5. WHAT WILL I BE ASKED TO DO?

If you agree to take part in this study, you will then be asked to complete a series of survey questionnaires. You will be asked questions to answer. The types of questions you will be asked include questions about your health, health behaviors, resources, support from family and friends, and activities you do on a daily basis. You may skip any question you feel uncomfortable answering. You will also be asked to participate in a follow-up interview.

6. What are my benefits of being in this study?

You may not directly benefit from this research; however, we hope that healthcare providers, community service providers and others will understand how older adults living in the community manage their health, the impact of their relationships on health, and how best to support persons living with multiple chronic illnesses to manage their care independently.

7. WHAT ARE my RISKS OF being in THIS STUDY?

We believe there are no known risks associated with this research study; however, a possible inconvenience may be the time it takes to complete the study, you may grow tired in answering many questions. Sometimes answering questions about our close relationships, health and illness brings up emotional responses which can be uncomfortable.

8. How will my personal information be protected?

The following procedures will be used to protect the confidentiality of your study records. The researchers will keep all study records in a secure location in a locked file cabinet in a locked office and secure building. All electronic files included in the database will contain no identifiable personal information, all surveys are assigned a number, and all electronic data will be password protected. While the researcher will be asking you about names of individuals you associate with, the researcher will not use these names but will replace with a pseudonym/initials reflecting role of the person (brother, sister, daughter etc.). Audio recordings will be destroyed immediately after transcription of the audio files, there will be no identifying information in the transcribed files. Any computer hosting such files will also have password protection to prevent access by unauthorized users. Only the members of the research staff will have access to the passwords. At the conclusion of this study, the researchers may publish their findings. Data collected during this study period may also be used for future research on living with chronic illness. Information will be presented in summary format and you will not be identified in any publications or presentations.

9. WILL I RECEIVE ANY PAYMENT FOR TAKING PART IN THE STUDY?

If you agree to participate, you will be given a $20 gift card or cash at the completion of your participation and the interview. If you agree to participate in a follow up interview you will also receive an additional $15 for your time.

10. WHAT IF I HAVE QUESTIONS?

Take as long as you like before you make a decision. We will be happy to answer any question you have about this study. If you have further questions about this project or if you have a research- related problem, you may contact the researcher, Dr. Raeann G LeBlanc at 978-808-4994 or research sponsor Dr. Cynthia Jacelon at 413-545-9576. If you have any questions concerning your rights as a research subject, you may contact the University of Massachusetts Amherst Human Research Protection Office (HRPO) at (413) 545-3428 or humansubjects@ora.umass.edu.

11. CAN I STOP BEING IN THE STUDY?

You do not have to be in this study if you do not want to. If you agree to be in the study, but later change your mind, you may drop out at any time. There are no penalties or consequences of any kind if you decide that you do not want to participate. Your decision to participate, refusal to participate, or withdrawal from the study at any time will not affect services that

you receive or could receive from programs provided by the Executive Office of Elder Affairs, Aging Services. Access Points (ASAPs), Area Agencies on Aging (AAAs), and Councils on Aging (COAs). This study is not sponsored by any of these organizations.

12. WHAT IF I AM INJURED?

The University of Massachusetts does not have a program for compensating subjects for injury or complications related to human subjects' research, but the study personnel will assist you in getting treatment.

13. SUBJECT STATEMENT OF VOLUNTARY CONSENT

When signing this form or stating consent (in a telephone interview) I am agreeing to voluntarily enter this study. I have had a chance to read/review this consent form, and it was explained to me in a language which I use and understand. I have had the opportunity to ask questions and have received satisfactory answers. I understand that I can withdraw at any time. A copy of this Informed Consent Form will be given to you to keep.

_____	_____	_____
Participant Signature:	Print Name:	Date:

By signing below, I indicate that the participant has read and, to the best of my knowledge, understands the details contained in this document and has been given a copy.

_____	_____	_____
Signature of Person Obtaining Consent	Print Name:	Date:

14. Follow Up Study Participation

If you would like to participate in a short in-person interview as a follow up to this study on the same subject, please check the box below and provide a phone number where you may be contacted. The follow up study will occur approximately 3-6 months after your participation in this study.

☐ Yes, I would like to be contacted to participate in a follow up interview and can be contacted

at:

_____

Participant Signature:	Print Name:	Date:

☐ Yes, I agree to be audio taped for the follow up interview.

By signing below, I indicate that the participant has read and, to the best of my knowledge, understands the details contained in this document and has been given a copy.

_____	_____	_____
Signature of Person Obtaining Consent	Print Name:	Date:

APPENDIX C

MEASURES

Study ID # _____

DATE: _____ Start Time: _____

Demographic Questionnaire & Chronic Disease Inventory

1. Age: _____ 2. Zip Code _____

4. Gender Identity: a) Male b) Female c) Transgendered d) Another Category

5. Sexual Identity: a) Gay b) Lesbian c) Heterosexual d) Bisexual e) Asexual f) Unknown

6. Out of Pocket Medical Expense (past month): _____Dollars

7. Household (number of persons in your home): _____

8. Household (number of pets in your home): _____

9. Religion: _____9. Number times attended religious gathering in past month):

   _____

11. Race/Ethnicity: a) Hispanic / Latino b) Non-Hispanic / Latino c) American Indian / Alaska Native d) Asian e) Black / African American f) Native Hawaiian / Hawaiian / Another Pacific Islander g) White e) Unknown f) Other _____

12. Number hospital admissions in past year: a) 0 b) 1 c) 2 d) 3 e) 4 f) 5 or more

13. Please tell me about your chronic medical conditions, do you have any of the following:

Circle answer:

Condition/History	**No**	**Yes**
Anemia	No	Yes
Asthma	No	Yes
Diabetes	No	Yes
Bipolar Mood Disorder	No	Yes
Bleeding Disorder	No	Yes
Cancer (Specify) Type(s)	No	Yes

Alzheimer's Disease	No	Yes
Chronic Obstructive Pulmonary Disease (COPD)	No	Yes
Depression	No	Yes
Anxiety Disorder	No	Yes
Atrial Fibrillation	No	Yes
Heart Attack (MI)	No	Yes
High Blood Pressure	No	Yes
Chronic Kidney Disease	No	Yes
Arthritis (Type)	No	Yes
High Cholesterol	No	Yes
Heart Failure	No	Yes
Glaucoma	No	Yes
Cataracts	No	Yes
Hearing Aid/Problem	No	Yes
Osteoporosis	No	Yes
Chronic Pain	No	Yes
Parkinson's Disease	No	Yes
Stroke/TIA	No	Yes
Thyroid Disorder	No	Yes
Total Number of CC		

If there are any conditions that you live with that I did not mention what are they?

14. When was you last healthcare visit: a) 3 months ago or less b) 6 months ago c) 12 months ago or more

15. Your home (do you): a) Own b) Rent: c) Live with a family member d) Other

16. Describe the highest education level you completed: a) Grade school b) High school c) 2-year college d) 4-year college e) Greater than 4 years of college

17. How many alcoholic drinks do you drink per day? a) None b) 1 c) 2 d) 3 or more

18. What number of cigarettes do you smoke per week? a) None b) 7-14 c) 15-30 d) 31-60 e) 60 or more

19. Do you exercise? a) No, never b) Yes 1-2 times/week c) 3-4 times/week d) 5-7 times/week

20. How many prescription drugs you take per day? A) None b) 1 c) 2 d) 3 e) 4 f) 5 g) 6 h) More than 6

21. Do you ever have difficulty paying for your medications? a) No b) Yes

Social Network List (Adapted from Antonucci, 1986; Hirsch 1979, 1980; Valente, 2010).

First, list all those persons who you are close to, talk to regularly List up to 10 and then state their role.

Person (Initials or first name only)	**Role (daughter, son, friend etc.)**
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Next, from the list you just gave me please tell me about the 5 people who you feel influence you in managing your health/caring for yourself the most. To protect confidentiality, instead of using each persons' full name, please define them by their first name only or a number (1-5). I will ask you ***several questions about each of the people you list starting with the first person (number 1).***

	List Up to 5 Members	**SNM 1**	**SNM 2**	**SNM 3**	**SNM 4**	**SNM 5**
		First Name	**First Name**	**First Name**	**First Name**	**First Name**
Descriptive						
1	Gender (M, F, T)					
2	Age					
3	Race					
4	Role (friend, neighbor, family member, partner, spouse)					
Reciprocity						
5	Do you give support to this person (say name)	Yes No	Yes No	Yes No	Yes No	Yes No

	who you receive support from?					
Proximity						
6	Does this person live within an hour's drive (yes or no)? How many minutes' drive?	Yes No Time:	Yes No Time:	Yes No Time:	Yes No Time:	Yes No Time:
Closeness						
7	How close are you to this person? (on a scale of 1-3 – 1 being the closest, 2=somewhat close; 3= not close)					
8	How long have you known this person (in years)?					
9	How often do you interact (daily, once per week or more often, once per month or more often, once per year or more often, irregularly)?					
10	How do you typically interact? (in person; phone; email; facebook; other)					
Involvement/Influence						
11	How involved is (name) in how you take care of your health? On a scale of 1-5 (1=not at all – 5 very)					
12	What is the impact of (name)'s involvement in your care? (0=none; 1=negative 2=positive)					
Density						

13	List the # of other people on this list that this person knows. Who exactly know who?					
14	List any people here who have the same chronic conditions as you?					
Activation of Support						
15	Do you ask (name) for help when you need it?	N Y	N Y	N Y	N Y	N Y
16	Do you ask (name) for help when sick or have a health concern?	N Y	N Y	N Y	N Y	N Y

Open-Ended Questions:

17. Are there non-human relationships (pets) in your social group that support your health? Yes or No (Specify)

18. Are there any groups you are involved in that support your health? Yes or No (Specify)

INSTRUMENTAL ACTIVITIES OF DAILY LIVING SCALE (IADL)

M.P. Lawton & E.M. Brody

Item	Score	Item	Score
A. Ability to use telephone		E. Laundry	
1. Operates telephone on own initiative; looks up and dials numbers, etc.	1	1. Does personal laundry completely	1
2. Dials a few well-known numbers	1	2. Launders small items; rinses stockings, etc.	1
3. Answers telephone but does not dial	1	3. All laundry must be done by others.	0
4. Does not use telephone at all.	0	F. Mode of Transportation	
B. Shopping		1. Travels independently on public transportation or drives own car.	1
1. Takes care of all shopping needs independently	1	2. Arranges own travel via taxi but does not otherwise use public transportation.	1
2. Shops independently for small purchases	0	3. Travels on public transportation when accompanied by another.	1
3. Needs to be accompanied on any shopping trip.	0	4. Travel limited to taxi or automobile with assistance of another.	0
4. Completely unable to shop.	0	5. Does not travel at all.	0
C. Food Preparation		G. Responsibility for own medications	
1. Plans, prepares and serves adequate meals independently	1	1. Is responsible for taking medication in correct dosages at correct time.	1
2. Prepares adequate meals if supplied with ingredients	0	2. Takes responsibility if medication is prepared in advance in separate dosage.	0
3. Heats, serves and prepares meals but does not maintain an adequate diet	0	3. Is not capable of dispensing own medication.	0
4. Needs to have meals prepared and served	0	H. Ability to Handle Finances	
D. Housekeeping		1. Manages financial matters independently (budgets, writes checks, pays rent, bills goes to bank), collects and keeps track of income.	1
1. Maintains house alone or with occasional assistance (e.g. “heavy work domestic help”)	1	2. Manages day-to-day purchases, but needs help with banking, major purchases, etc.	1
2. Performs light daily tasks such as dishwashing, bed making	1	3. Incapable if handling money.	0

3. Performs light daily tasks but cannot maintain acceptable level of cleanliness.	1		
4. Needs help with all home maintenance tasks.	1		
5. Does not participate in any housekeeping tasks	0		

Source: *Lawton, M.P., and Brody, E.M. "Assessment of older people: Self-maintaining and instrumental activities of daily living." Gerontologist 9:179-186, (1969).*

Medical Outcomes Survey Health SF-12® (Measure of health, function, and well-being)

1. In general, would you say your health is:
_____ Excellent (1)
_____ Very Good (2)
_____ Good (3)
_____ Fair (4)
_____ Poor (5)

The following two questions are about activities you might do during a typical day. Does YOUR
HEALTH NOW LIMIT YOU in these activities? If so, how much?

2. MODERATE ACTIVITIES, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf:
_____ Yes, Limited A Lot (1)
_____ Yes, Limited A Little (2)
_____ No, Not Limited At All (3)

3. Climbing SEVERAL flights of stairs:
_____ Yes, Limited A Lot (1)
_____ Yes, Limited A Little (2)
_____ No, Not Limited At All (3)

During the PAST 4 WEEKS have you had any of the following problems with your work or other regular activities AS A RESULT OF YOUR PHYSICAL HEALTH?

4. ACCOMPLISHED LESS than you would like:
_____ Yes (1)
_____ No (2)

5. Were limited in the KIND of work or other activities:
_____ Yes (1)
_____ No (2)

During the PAST 4 WEEKS, were you limited in the kind of work you do or other regular activities AS A RESULT OF ANY EMOTIONAL PROBLEMS (such as feeling depressed or anxious)?

6. ACCOMPLISHED LESS than you would like:
_____ Yes (1)
_____ No (2)

7. Didn't do work or other activities as CAREFULLY as usual:
_____ Yes (1) _____ No (2)
8. During the PAST 4 WEEKS, how much did PAIN interfere with your normal work (including both work outside the home and housework)?
_____ Not At All (1)
_____ A Little Bit (2)
_____ Moderately (3)
_____ Quite A Bit (4)
_____ Extremely (5)

The next three questions are about how you feel and how things have been DURING THE PAST 4 WEEKS. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the PAST 4 WEEKS –

9. Have you felt calm and peaceful?
_____ All of the Time (1)
_____ Most of the Time (2)
_____ A Good Bit of the Time (3)
_____ Some of the Time (4)
_____ A Little of the Time (5)
_____ None of the Time (6)

10. Did you have a lot of energy?
_____ All of the Time (1)
_____ Most of the Time (2)
_____ A Good Bit of the Time (3)
_____ Some of the Time (4)
_____ A Little of the Time (5)
_____ None of the Time (6)

11. Have you felt downhearted and blue?
_____ All of the Time (1)
_____ Most of the Time (2)
_____ A Good Bit of the Time (3)
_____ Some of the Time (4)
_____ A Little of the Time (5)
_____ None of the Time (6)

12. During the PAST 4 WEEKS, how much of the time has your PHYSICAL HEALTH OR EMOTIONAL PROBLEMS interfered with your social activities (like visiting with friends, relatives, etc.)?
_____ All of the Time (1)
_____ Most of the Time (2)
_____ A Good Bit of the Time (3)
_____ Some of the Time (4)
_____ A Little of the Time (5)

_____ None of the Time (6)

Sense of Control

Experience of Current Situation
Wallhagen Revised PCQ Questionnaire 15 Item Version

Let's begin with (READ 1). Do you agree or disagree? Moderately or strongly?

	Agree		Disagree		
	Strongly	Mod.	Mod.	Strongly	NA
1. I do not have the ability to handle events that are occurring in my life.	1	2	3	4	9
2. The responsibilities I have are too much to bear.	1	2	3	4	9
3. My resources are not adequate to handle what I have to deal with right now.	1	2	3	4	9
4. My current situation is under control.	1	2	3	4	9
5. I do not think I can do what is required of me.	1	2	3	4	9
6. I have adequate coping skills to use to meet current demands.	1	2	3	4	9
7. I accomplish things in my daily life that are important to me.	1	2	3	4	9
8. I cannot cope with my current situation.	1	2	3	4	9
9. Everything is running smoothly.	1	2	3	4	9
10. The situation in which I am now is too difficult for me to handle.	1	2	3	4	9
11. I do not have any say in what is happening in my life.	1	2	3	4	9
12. I am on top of things.	1	2	3	4	9
13. Things are going along as planned.	1	2	3	4	9
14. I have the resources I need to deal with my situation.	1	2	3	4	9
15. I can't hang in there much longer.	1	2	3	4	9

Permission from Dr. M. Wallhagen requested 2/15/2015 and received per correspondence 8/30/2015.

Jacelon Attributed Dignity Scale

During the past week:	Untrue			Completely True
1. I have been polite to other people.	1	2	3	4
2. I have tried not to judge people before I get to know them.	1	2	3	4
3. I have tried to do things for other people.	1	2	3	4
4. I have considered other people's feelings before speaking.	1	2	3	4
5. I believe other people have treated me as an equal.	1	2	3	4
6. People have enjoyed my company.	1	2	3	4
7. I have been reliable.	1	2	3	4
8. I have been sensitive to the needs of others.	1	2	3	4
9. I believe people have respected me.	1	2	3	4
10. I have had a sense of purpose.	1	2	3	4
11. My life has had meaning.	1	2	3	4
12. I have been honest.	1	2	3	4
13. I have treated other people with respect.	1	2	3	4
14. I have laughed at myself.	1	2	3	4
15. I have respected myself.	1	2	3	4
16. I have avoided saying or doing things that might hurt other people.	1	2	3	4
17. My manners have been important to me.	1	2	3	4
18. I think I have made a difference.	1	2	3	4

Used with permission from Dr. C. Jacelon, personal correspondence 2/16/2015.

Medical Outcomes Study: Social Support Survey Instrument

People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it? Circle one number on each line.

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Emotional/informational support					
Someone you can count on to listen to you when you need to talk	1	2	3	4	5
Someone to give you information to help you understand a situation	1	2	3	4	5
Someone to give you good advice about a crisis	1	2	3	4	5
Someone to confide in or talk to about yourself or your problems	1	2	3	4	5
Someone whose advice you really want	1	2	3	4	5
Someone to share your most private worries and fears with	1	2	3	4	5
Someone to turn to for suggestions about how to deal with a personal problem	1	2	3	4	5
Someone who understands your problems	1	2	3	4	5
Tangible support					
Someone to help you if you were confined to bed	1	2	3	4	5
Someone to take you to the doctor if you needed it	1	2	3	4	5
Someone to prepare your meals if you were unable to do it yourself	1	2	3	4	5
Someone to help with daily chores if you were sick	1	2	3	4	5
Affectionate support					
Someone who shows you love and affection	1	2	3	4	5
Someone to love and make you feel wanted	1	2	3	4	5
Someone who hugs you	1	2	3	4	5
Positive social interaction					
Someone to have a good time with	1	2	3	4	5
Someone to get together with for relaxation	1	2	3	4	5

Someone to do something enjoyable with	1	2	3	4	5
Additional item					
Someone to do things with to help you get your mind off things	1	2	3	4	5

Available for public use from the RAND Corporation - http://www.rand.org/health/surveys_tools/mos/mos_socialsupport.html

SIDANI DORAN THERAPEUTIC SELF-CARE MEASURE (Home Care

Each of the following statements is about an aspect of your care related to your present health condition. Indicate how much you are able to do each care related activity, by choosing the number between "0"and "5" that is most appropriate.

Care Activity	Not at all					Very much so
1. Do you know what medications you have to take?	0	1	2	3	4	5
2. Do you understand the purpose of the medications prescribed to you (that is, do you know what the medications do for your health conditions)?	0	1	2	3	4	5
3. Do you take the medications as prescribed?	0	1	2	3	4	5
4. Can you recognize changes in your body (symptoms) that are related to your illness or health conditions?	0	1	2	3	4	5
5. Do you know and understand why you experience some changes in your body (symptoms) related to your illness or	0	1	2	3	4	5
6. Do you *know what to do* (things or activities) to manage these changes in your body (symptoms)?	0	1	2	3	4	5
7. Do you *carry out the treatments or activities* that you have been taught to manage these changes in your body	0	1	2	3	4	5
8. Do you do things or activities to look after yourself and to maintain your health in general?	0	1	2	3	4	5
9. Do you know whom to contact to get help in carrying out your daily activities?	0	1	2	3	4	5
10. Do you know whom to contact in case of a medical emergency?	0	1	2	3	4	5
11. Do you perform your regular activities (such as bathing, shopping, preparing meals, visiting with	0	1	2	3	4	5
12. Do you adjust your regular activities when you experience body changes (symptoms) related to your	0	1	2	3	4	5

APPENDIX D

INTERVIEW GUIDE

1. Could you tell be about how your social relationships or a social relationship influenced your health (positively)?
    a. Prompt: A specific story of ways a person or people have supported your health?
2. Could you tell be about how your social relationships or a social relationship influenced your health (negatively)?
    a. Prompt: A specific story of ways a person or people have impacted your health poorly?
3. Tell me about support from your relationship(s) if you were confined to bed or really needed lots of health if you were sick.
    a. Prompt: Have you ever been in that situation?
4. Can you think of a time you needed assistance (support) and you did not ask for it?
    a. Prompt: Do you have a specific example?
    b. Prompt: How might you imagine this in the future – asking your family and friends for support?
5. Are there any aspects of health that impact how you related to others?
    a. Prompt: Could you give me an example?
    b. Explore more: How does the health of other people you are close to impact your relationship with them?
6. Could you tell me about a resource or tool (provide example if unclear) you need most to support health?

a. Example: For example, some people use a calendar to remind themselves of appointments.

End: Thank you, if you would like a copy of this transcript I can mail it to you.

APPENDIX E

IRB APPROVAL

University of Massachusetts Amherst
108 Research Administration Bldg.
70 Butterfield Terrace
Amherst, MA 01003-9242

Research Compliance
Human Research Protection Office (HRPO)
Telephone: (413) 545-3428
FAX: (413) 577-1728

Certification of Human Subjects Approval

Date: August 31, 2015
To: Raeann LeBlanc, Nursing
Other Investigator: Cynthia Jacelon, Nursing
From: Lynnette Leidy Sievert, Chair, UMASS IRB

Protocol Title: The Effect of Social Networks on Self-Care Behaviors and Health Outcomes Among Older Adults Living with Multiple Chronic Conditions
Protocol ID: 2015-2538
Review Type: EXPEDITED - REVISION
Paragraph ID: 7
Approval Date: 08/31/2015
Expiration Date: 07/05/2016
OGCA #:

This study has been reviewed and approved by the University of Massachusetts Amherst IRB, Federal Wide Assurance # 00003909. Approval is granted with the understanding that investigator(s) are responsible for:

Modifications - All changes to the study (e.g. protocol, recruitment materials, consent form, additional key personnel), must be submitted for approval in e-protocol before instituting the changes. New personnel must have completed CITI training.

Consent forms - A copy of the approved, validated, consent form (with the IRB stamp) must be used to consent each subject. Investigators must retain copies of signed consent documents for six (6) years after close of the grant, or three (3) years if unfunded.

Adverse Event Reporting - Adverse events occurring in the course of the protocol must be reported in e-protocol as soon as possible, but no later than five (5) working days.

Continuing Review - Studies that received Full Board or Expedited approval must be reviewed three weeks prior to expiration, or six weeks for Full Board. Renewal Reports are submitted through e-protocol.

Completion Reports - Notify the IRB when your study is complete by submitting a Final Report Form in e-protocol.

Consent form (when applicable) will be stamped and sent in a separate e-mail. Use only IRB approved copies of the consent forms, questionnaires, letters, advertisements etc. in your research.

Please contact the Human Research Protection Office if you have any further questions. Best wishes for a successful project.

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